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Contents of  
1938 Directory**

The new 1938 Directory (No. D-1) is designed especially for the buyer of refrigeration and air-conditioning products. The data is arranged in seven sections:

- (1) Manufacturers of air-conditioning systems and equipment;
- (2) Manufacturers of commercial refrigeration and equipment;
- (3) Manufacturers of household refrigeration and equipment;
- (4) Manufacturers of parts, materials, supplies, and accessories;
- (5) Jobbers, schools, and foreign manufacturers;
- (6) Index of manufacturers' names, including street addresses;
- and (7) Alphabetic cross index of classified products.

The 1938 Directory is an absolute necessity to anyone who has the responsibility for buying refrigeration and air-conditioning products. Manufacturers are listed and classified *by products*. This is an entirely *new* Directory. Every name has been carefully checked. Each type and variety of equipment is accurately described. This 252-page book is ready for immediate delivery and the price is only \$1.00 per copy. Use the coupon below.

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# Air Conditioning & Refrigeration News

The Newspaper of the Industry

Trade Mark Registered U. S. Patent Office. Established 1926 as Electric Refrigeration News  
Member Audit Bureau of Circulations. Member Associated Business Papers.

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## 71,544 Units Is '37 Sales Total For Philadelphia

**Big Gain Shown Over '36; December Down 13%; Average Price \$175**

PHILADELPHIA—Sales of household electric refrigerators in the Philadelphia territory during 1937 totaled 71,544 units, an increase of 12% over the 63,804 units sold in 1936, according to reports by distributors and dealers to the Electrical Association of Philadelphia.

Dollar volume of sales during 1937 totaled \$12,534,463, a gain of 13% over the 1936 volume, which amounted to \$11,058,104. Average price of units sold in 1937 also increased \$2, going to \$175 from an average of \$173 during 1936.

In all but four months of the year, 1937 sales showed increases over the comparable period of 1936. Largest monthly increase was in February, when the 6,119 units sold represented a gain of 67% over 3,657 sales in that month in 1936. Biggest drop was registered in December, the 1937 sales of 3,240 units being 13% below the 1936 figures for the month, 3,714 units.

The period February through July was the "big sales season" for Philadelphia area dealers last year, almost 70% of the total year's sales (Concluded on Page 2, Column 4)

## 1937 World Sales 2,500,000 Units

DETROIT—American manufacturers made total world sales of 2,500,000 household electric refrigerators to distributing outlets during 1937, according to estimates made by AIR CONDITIONING & REFRIGERATION NEWS upon receipt of complete figures for the year issued by the Household Refrigeration Section of the Refrigeration Division of National Electrical Manufacturers Association (Nema).

Sales in the U. S. only last year amounted to 2,300,000 units, according to the estimate. This makes an estimated total of 11,251,000 electric refrigerators in use in the U. S. as of Dec. 31, 1937. Market saturation, based on this total, is 49.3%.

Average retail price of the refrigerators sold in this country during 1937 was calculated to be \$173.

World sales to distributing outlets during December was estimated at 119,000 units. December sales by manufacturers who are members of the Nema Refrigeration Division were reported as 113,132 units, while world sales for the Nema group in 1937 totaled 2,394,659.

World sales in December of commercial refrigerating machines by 14 manufacturers who report sales to the Commercial Refrigeration Section of the Refrigeration Division of Nema amounted to 7,291 units, bringing the total for the year reported by this group to 250,964 units.

## Burton Heads West Zone For Universal Cooler

DETROIT—J. L. Burton, former manager of domestic contract sales for Universal Cooler Corp., has been appointed western zone manager for the company, according to F. S. McNeal, president. He will maintain headquarters in Los Angeles.

Before coming to Universal, Mr. Burton was connected with Kelvinator of Canada, Ltd. at London, Ont., for six years, first as manager of the Toronto, Ont., branch and later as zone manager.

## Parts Makers To Discuss Site For Next Convention

CHICAGO—A special meeting of the board of directors of the Refrigeration Supplies and Parts Manufacturers' Association has been scheduled for Feb. 17 in the bungalow in the tower of the Morrison hotel for the primary purpose of setting the date and place and making preliminary preparations for the association's convention this fall, according to R. M. McClure, executive secretary.

Executives of all member companies have been invited to attend this meeting and to submit to the executive secretary by mail any suggestions which they may have or any problems which they feel that the board should discuss.

Directors of the National Refrigeration Supply Jobbers Association are holding a meeting at the Morrison on Feb. 17 and 18, during which they too will determine when and where they will hold their annual meeting this year.

## U. S. Removes Bans On Australian Goods

WASHINGTON, D. C.—Strained trade relations which have existed for nearly two years between the United States and Australia have been restored to normal, the State Department has announced.

Australia has been placed on the list of countries entitled to receive "most-favored-nation" treatment and generalization of concessions granted in all reciprocal trade agreements the United States may negotiate.

Since August, 1936, Australia had been listed, with Germany, as a country the products of which should not be accorded generalization of benefits. This listing was made by President Roosevelt under authority of the Trade Agreement Act, which says that such generalization may be withheld from the products of any country which discriminates against the commerce of this country.

Made public by the State Department was a note which the American consul general at Sydney had com-

## 'Gift-Of-The-Month' Promotion Off To Flying Start In Milwaukee

MILWAUKEE—More than 130 Milwaukee appliance dealers are cooperating with Milwaukee Electric Railway & Light Co. in the recently announced "gift-of-the-month" coordinated campaign on electrical appliances in 1938, reports Fred E. Ericksen, the utility's advertising manager.

Dealer attendance at the meeting at which the plan was announced exceeded 800, Mr. Ericksen reports. Entry blanks in the first month's contest, which closes Feb. 25, are arriving in increasing numbers. The original run of entry blanks has been exhausted, and a repeat run was necessary.

Cooperation from dealers has been exceptional, Mr. Ericksen says, and dealers who were unable to attend the meeting at which the plan was announced are requesting that they be permitted to cooperate in the campaign.

The "gift-of-the-month" plan is designed to identify and popularize locations of electrical appliance dealers' stores, to bring more people into dealers' stores, to create widespread interest in a particular electrical appliance every month, and to make residents of the Milwaukee trade area more "electrical appliance" conscious.

Each month during 1938, February to December inclusive, the Electric

## At Long Last! New Cooking School Ideas - - Pg. 6

Cooking schools are just cooking schools to most distributors and dealers. Some favor, others spurn them. But little or no original thinking on this method of obtaining prospects and arousing interest in kitchen appliances has been presented for years.

On page 6 of this issue, however, novel methods of making something out of the cooking school idea—as practiced by a furniture store and a department store in Oakland, California—are brought to light.

These plans are outlined in detail for the benefit of dealers who are bored with their present cooking school programs, and dealers who have never felt like using this form of promotion.

## TVA Area Appliance Sales Increased 76%; Refrigerators Lead

CHATTANOOGA, Tenn.—Consumers of electricity supplied by municipal and cooperative electric membership associations in the Tennessee river valley which purchase electric power in wholesale quantities from the Tennessee Valley Authority spent more than \$2,000,000 for electrical appliances during 1937, TVA officials have reported.

This figure represents an increase of 76.1% over the \$1,033,817 worth of household appliances purchased by these consumers during 1936.

Retailers of electrical equipment reported sales to TVA consumers in 1937 of \$1,120,583 worth of household appliances and \$114,277 worth of commercial equipment. This report did not include sale of electric motors for use in rural areas, the Authority said. Addition of this figure would push total sales well over the \$2,000,000 mark.

Retail sales of residential or household appliances were divided as follows: 5,528 refrigerators; 1,982 ranges; 1,595 washers; 794 water heaters; 61 ironers; 9,604 miscellaneous appliances.

(Concluded on Page 2, Column 2)

## Universal Cooler's New Room Cooler Priced Under \$300

DETROIT—A new portable room cooler which will be sold direct to stores and will retail at less than \$300 has been announced by Universal Cooler Corp.

The new unit cleans, cools, dehumidifies, and circulates air. It is designed for use in homes, offices, small shops, hospital or hotel rooms, and similar locations, according to H. A. D'Arcy, Universal Cooler's domestic sales manager.

Equipped with a ¾-hp. water-cooled compressor using Freon refrigerant, the conditioner has a capacity of 9,000 B.t.u. per hour (A.S.R.E. rating).

Its furniture-steel cabinet, finished in grain walnut, measures 39½ inches high, 32 inches wide, and 19¾ inches deep. Removable panels afford access to the entire mechanism.

Installation of the unit is said to entail only three pipe connections and one electrical connection.

## Hannah To Manage Brunswick In N. Y.

CHICAGO—H. D. Laidley, general sales manager, appliance division, Brunswick-Balke-Collender Co., announces the appointment of L. J. Hannah as New York district manager.

Mr. Hannah was at one time Chicago manager of Campbell Ewald Co., and for several years operated his own advertising agency in Chicago. More recently he has been an account executive with the Blackman Co. and the Ferry-Hanly Co., advertising agencies.

Mr. Hannah is well remembered by the pioneer sales and advertising managers of the electric refrigeration manufacturers as the producer of a series of advertisements which met unanimous approval of the committee in charge of the first cooperative advertising campaign which was launched by the Refrigeration Manufacturers Council back in 1926.

At a time when few precedents had been established regarding proper methods of educating the public to an understanding of electric refrigeration and when the representatives of the various manufacturing companies were engaged in heated discussions regarding sales appeals and advertising policies, Mr. Hannah submitted a series of layouts and copy which stirred the enthusiasm of the entire committee. This series of advertisements helped materially in coordinating the efforts of the various competitive manufacturers.

## McMullen To Oversee Frigidaire Standards

DAYTON—Promotion of C. W. McMullen, assistant chief inspector, Frigidaire Division, General Motors Corp., to manager of Frigidaire's standards division, has been announced by E. G. Biechler, Frigidaire's general manager.

Mr. McMullen succeeds Harry M. Williams, who resigned to become director of research of National Cash Register Co. In his new position, Mr. McMullen will be responsible for maintaining the quality of materials and production in the Frigidaire plants.

In 1913, at the age of 16, Mr. McMullen went to work in the tool room of the Dayton Engineering Laboratories Co. (Delco) as an apprentice, continuing his education by studying during his off time at Dayton Co-Operative high school.

Six years later he became tool inspector at Delco-Light Co., and in 1920 was made foreman of production inspection. In 1921 he was

(Concluded on Page 2, Column 3)

## Dealers Urged To Use 'Heart Throb' Appeal

**Picturing Appliances' Thrill Aid To Sales, Wisconsin Contractors Told**

MADISON, Wis.—Appliance merchandising was a major discussion topic with the more than 100 electrical contractors and dealers who attended the annual convention of the Wisconsin Electrical Association here Feb. 6-8.

Otto E. Braun, vice president of Harloff Electric Co., Madison contracting firm retailing appliances, told contracting members of the association that "it is up to you" to "reap the harvest" in the appliance merchandising field, but cautioned his listeners that they "must be equipped with the knowledge and the tools to get this business."

Discussing "Why the Electrical Contractor Should Merchandise Appliances," Mr. Braun pointed out that electrical merchandising has become highly competitive, that appliance selling is a business that requires attractive displays and trained help.

"An electrical contractor should merchandise only if he has a man who understands this phase of the industry, or if he himself can devote his time to this end of his business," he said.

"Women aren't reasonable in the technical definition of the term. They are governed more by emotions than by logic. In thinking of the logic of electrical appliances, we have too often neglected the 'heart throb' of them; the thrill, the pleasure, the enjoyment, the allure they make possible."

"The electrical dealer must handle appliances that have eye appeal and still are practical. Makers of the so-called 'standard' types of appliances."

(Concluded on Page 2, Column 3)

## Philipp New Chairman Of Nema Committee

NEW YORK CITY—Dr. L. A. Philipp, director of laboratories for the Kelvinator division of Nash-Kelvinator Corp., was appointed chairman of the technical committee of the Household Section of the Refrigeration Division of National Electrical Manufacturers Association (Nema) at the annual Nema meeting here last week.

Dr. Philipp succeeds Harry Williams, Frigidaire engineer, who recently joined the National Cash Register Co. as director of research.

S. M. Schweller succeeds Mr. Williams as the Frigidaire representative on the committee.

Other business at the meeting was concerned with inter-association affairs.

## Schools On Commercial Refrigeration Planned By Westinghouse

MANSFIELD—In one of the most extensive field educational programs yet attempted on commercial refrigeration, two "flying squadrons" from the commercial refrigeration department of Westinghouse Electric & Mfg. Co. will tour the country and hold schools for the sale, application, and installation of the company's commercial refrigeration systems.

From 90 to 95% of the trouble experienced in the field, the company has found, is due either to inexperience with the equipment itself, or lack of experience with its application or installation.

Approximately 30 schools will be held, with headquarters executives in

(Concluded on Page 17, Column 3)



## Milwaukee Dealers Swing Into Action As Utility Backs Contest Promotion Plan

(Concluded from Page 1, Column 3) members of their families. Limerick contest judging committee will be composed of two representatives of the electrical industry, one from the newspaper field, one from the Klau-Van Pietersom-Dunlap advertising agency, and one from the Electric Co.

Extensive advertising will back up the "gift-of-the-month" campaign. Opening the drive was a preliminary announcement of the limerick contest in four Milwaukee metropolitan dailies on Jan. 24 and 25.

Other newspaper advertising will include a series of large space insertions showing pictures of participating dealers, and their store addresses. From February to December, limerick contest advertisements will appear twice a month in Milwaukee and suburban newspapers. A total of 36 newspapers will be used.

Each advertisement will inform the public that official entry blanks in the contest must be obtained from one of the cooperating dealers. Advertisements will be signed by "Greater Milwaukee Appliance Dealers and the Electric Co." The utility will bear the entire expense of this advertising.

### RADIO, BILLBOARDS USED

Radio advertising will include frequent announcements each week of the limerick contests over stations WTMJ, WISN, and WEMP.

The utility also will furnish dealers with paper for posting up to 105 billboards per month, space cost to be shared by dealers and the utility. The Electric Co.'s name will not appear on the posters, which will play up the contest of the month and the participating dealer's name. Dealers need not contract for any poster space, and dealers who wish to use more than one board may do so, if the 105 posters are not all spoken for by others.

Twice-a-month signs on the dashes of street cars also will be used to promote the contest, and dealers will be provided with window streamers twice monthly, featuring the limerick contest.

Entry blanks containing the month's limerick will be supplied all participating dealers. On each blank is a space in which the entrant is asked to indicate the name and address of the dealer from whom he wishes to select his appliance, in the event he wins. Space also is provided for the entrant to list the appliances he now has.

At the end of each month's contest, all entry blanks bearing a dealer's name will be returned to

that dealer for his future use and follow-up.

Dealer bulletins, containing suggestions for window trims, news of interest concerning the contest, progress of the plan, sales helps, etc., will be sent out monthly by the Electric Co.

Announcements of the "gift-of-the-month" limerick contest will be attached to electric service bills going to 220,000 customers of the utility during February.

To qualify for participation in the contest, dealers are required to display the "gift-of-the-month" appliance in their show windows, use window streamers as furnished by the utility, and have on hand and distribute the monthly official entry blanks. Dealers may start participation in the plan any time within the year, and stay in as many months as they choose.

For 1938, the Electric Co. has set a quota for the Milwaukee area of 3,250 electric ranges, 15,000 electric refrigerators, 1,250 electric water heaters, 25,000 electric cookers, and 25,000 "better sight" lamps.

Sales during 1937 include 2,770 ranges, 13,500 refrigerators, 980 water heaters, 24,000 electric cookers, and 20,000 lamps.

On electric ranges and water heaters, the utility has a dealers' cooperative sales plan which includes financing of instalment sales contracts, home demonstrations, servicing during the guarantee period, public demonstrations of electric cooking, and consistent advertising. Dealer contact men on electric ranges and water heaters also are available to assist in smoothing out sales problems.

## Appliance Sales Increased 76% In TVA Area

(Concluded from Page 1, Column 3)

The number of customers served by municipalities and cooperatives retailing TVA power increased 48.9% during 1937. Total residential customers on the lines of these agencies in December, 1937, was 30,203, compared with 20,299 in December, 1936. These figures exclude all government reservations.

The difference between the percentage increase of customers and that of appliance sales indicates, according to local dealers' reports, that a large number of appliances were purchased by consumers who had been receiving TVA service for more than a year.

## Philadelphia Dealers Sold 71,544 Boxes In 1937 At an Average Price Of \$175

Month	1937 Units Sold	1936 Units Sold	1935 Units Sold	1937% Inc. Or Decrease Over 1936	1937 Retail Value	1936 Retail Value	1937% Inc. Or Decrease Over 1936	1937 Average Price	1936 Average Price
January	3,135	2,532	718	+24%	\$ 524,071	\$ 456,989	+15%	\$167	\$181
February	6,119	3,657	2,634	+67%	1,076,607	681,667	+57%	175	186
March	9,051	7,668	6,357	+18%	1,570,635	1,349,089	+16%	173	176
April	9,452	9,870	6,652	-4%	1,638,226	1,718,797	-4%	173	174
May	9,743	9,911	7,885	-2%	1,695,279	1,719,936	-1%	174	173
June	9,103	6,641	5,936	+37%	1,608,916	1,108,942	+45%	177	167
July	7,435	6,409	6,290	+16%	1,312,554	1,113,894	+17%	176	174
August	4,725	3,951	4,035	+19%	838,164	653,911	+28%	177	166
September	3,762	3,591	2,730	+5%	640,713	633,389	+1%	170	176
October	2,456	2,695	2,330	-8%	420,742	454,065	-8%	171	168
November	3,323	3,165	1,839	+5%	600,496	508,333	+17%	180	161
December	3,240	3,714	2,362	-13%	608,060	659,092	-8%	187	177
<b>Totals</b>	<b>71,544</b>	<b>63,804</b>	<b>49,768</b>	<b>+12%</b>	<b>\$12,534,463</b>	<b>\$11,058,104</b>	<b>+13%</b>	<b>\$175</b>	<b>\$173</b>

### Sales By Philadelphia Electric Co.

Month	1937 Units Sold	1936 Units Sold	1935 Units Sold	1937% Inc. Or Decrease Over 1936	1937 Retail Value	1936 Retail Value	1937% Inc. Or Decrease Over 1936	1937 Average Price	1936 Average Price
January	96	81	53	+19%	\$ 18,290	\$ 16,718	+9%	\$190	\$206
February	191	160	104	+19%	36,658	29,623	+23%	192	185
March	457	372	302	+23%	87,763	70,191	+25%	192	188
April	809	810	568	-.002%	157,812	152,348	+3%	195	188
May	892	867	719	+2%	177,393	163,008	+8%	198	188
June	850	768	715	+11%	172,633	143,474	+20%	203	186
July	623	625	685	-.004%	128,175	117,068	+9%	206	187
August	500	426	513	+17%	102,259	81,241	+25%	204	190
September	288	297	263	-3%	57,885	56,933	+1%	200	191
October	118	133	122	-11%	22,855	28,005	-18%	194	210
November	83	126	113	-34%	16,719	22,715	-26%	200	180
December	149	128	108	+16%	28,535	23,548	+21%	191	184
<b>Totals</b>	<b>5,056</b>	<b>4,793</b>	<b>4,263</b>	<b>+5%</b>	<b>\$1,006,977</b>	<b>\$904,892</b>	<b>+11%</b>	<b>\$199</b>	<b>\$188</b>

Note: Utility sales approximate 7% of total sales.

Report covers sales in Philadelphia, Bucks, Montgomery, Delaware, and Chester Counties.

Report includes sales of the following makes: Apex, Coldspot, Crosley, Frigidaire, Copeland, General Electric, Grunow, Hotpoint, Kelvinator, Leonard, Norge, Sparton, Stewart-Warner, Universal, and Westinghouse.

## Contractors Advised To Cultivate Farmer For Appliance Sales

(Concluded from Page 1, Column 5)

ances have only recently realized that their products must have plenty of eye appeal. Let us remember that women still do most of the buying of appliances. The things we sell must appeal to them.

"The dealer in the rural communities, because of the REA program, has had a large and fertile field opened up for him, yet he has been slow to take advantage of it. The farmer himself has also been slow to put appliances to work on the farm. He must be sold on the idea that electricity can become his cheapest hired man, that with electrical appliances to do his work he will have more time for leisure.

"Here again we must appeal to the farm woman. She is no different than her city sister. She wants pleasures, she enjoys leisure; she, too, is seeking the way to gracious living. Her emotions are no different than those of the city woman."

Roy Springer, Superior, was re-elected president of the association. Other officers are R. J. Nickles, Madison, vice president; William Merkel, Marshfield, treasurer; and E. H. Herzberg, Milwaukee, executive secretary.

## McMullen Is Standards Director For Frigidaire

(Concluded from Page 1, Column 3) placed in charge of receiving inspection, and checked in Frigidaire parts and other equipment brought to Dayton when Frigidaire was moved from Detroit.

On Oct. 10, 1921, he personally attached the inspection department's approval tag to the first Frigidaire built in Dayton. In 1925 he was named assistant chief inspector, the position which he leaves to become manager of standards.

## Cal Mitchell Joins Bendix As Regional Manager

CHARLOTTE, N. C.—Calvin D. Mitchell has resigned as district manager for Kelvinator Division, Nash-Kelvinator Corp. in this territory to accept the position of regional sales manager for Bendix Home Appliances, Inc.

He will cover the states of North and South Carolina, Georgia, Tennessee, Virginia, Alabama, and Florida, and will establish regional headquarters offices here.

## Sales In Philadelphia During '37 Showed Less Seasonal Trend

(Concluded from Page 1, Column 1)

being made during that six months' stretch. The year's two highest months, however, April and May, were 4% and 2% below the same months of 1936, despite their sales totals of 9,452 and 9,743 units, respectively.

In retail sales value, six months of last year showed totals in excess of \$1,000,000, compared with five months of 1936 showing similar volume figures.

Sales by Philadelphia Electric Co. only totaled 5,056 units during 1937, an increase of 5% over the 4,793 units sold by the company during 1936. Volume of sales, however, was up 11%, totaling \$1,006,977 compared to \$904,892 in 1936.

April, May, and June were the company's best sales months.

Average price of units sold by the utility company was \$199, compared with an average price of \$188 in 1936, an increase of \$11. Utility company sales approximate 7% of total sales in the territory.

The report covers sales made in Philadelphia, Bucks, Chester, Delaware, and Montgomery counties, and includes the following makes of refrigerators: Apex, Coldspot, Crosley, Frigidaire, Copeland, General Electric, Grunow, Hotpoint, Kelvinator, Leonard, Norge, Sparton, Stewart-Warner, Universal, and Westinghouse.

## U. S.—Australia Reach Trade Agreement

(Concluded from Page 1, Column 2) municated to the Australian government. The note reads:

"I am instructed by my government to inform you that, on the basis of the announcement made by the Government of Australia on Dec. 7, 1937, of its intention to abolish import restrictions and of action subsequently taken which effectively restores to American exporters without discrimination the market possibilities they formerly enjoyed in Australia, the President of the United States has directed that, beginning Feb. 1, 1938, the products of Australia entering the United States shall thenceforth be accorded most-favored-nation tariff treatment."

Discrimination against American commerce was the result of the addition by the Australian government of a system of licenses for imports. Licensing officials were instructed not to permit the entry of any goods on an established list which came from any country with which Australia had an unfavorable trade balance.

## Servel Directors Declare 25-Cent Dividend

EVANSVILLE, Ind.—Directors of Servel, Inc. have declared the regular quarterly dividend of 25 cents per share on 1,781,426 outstanding shares of common stock, payable March 1 to stockholders of record Feb. 16.

As  
Abraham Lincoln  
once said:—"You can  
fool all of the people some of  
the time—and some of the people  
all of the time—but you can't fool  
all of the people all of the time."

Porcelain enamel is the ultimate  
finish for both interior and exterior.



**PORCELAIN ENAMEL INSTITUTE, INC.**  
612 North Michigan Avenue  
Chicago

## PARTS LIKE THESE

**SMALL STAMPINGS—WIRE FORMS  
SPRINGS—VARIOUS TYPES  
WASHERS—PLAIN, SPRING, SPECIAL**  
have solved countless design and manufacturing problems. Let us know what yours is. Design consultant services at your disposal. It will pay you to inquire.

M. D. HUBBARD, Pres. R. M. HUBBARD J. A. HUBBARD, Secy

## M. D. Hubbard Spring Company

633 CENTRAL AVE., PONTIAC, MICH.



**JUST OUT!****THE WINNING SELLING THEME FOR 1938!**

# FRIGIDAIRE WITH NEW SILENT METER-MISER

## Saves More on Current, Food, Ice, Upkeep!

## SAVE ALL 4 WAYS or You May Not Save at All!



• This powerful selling theme spearheads Frigidaire's 1938 sales attack. It's based on a 4-way savings demonstration that gives buyers undeniable refrigeration facts, and proof before their eyes, before they buy! Proof that Frigidaire with the new Silent Meter-Miser is the greatest money-saver in Frigidaire history. Proof that it saves more in every way there is to save! . . . Yes, some refrigerators may save in one, two, or even three ways, but Frigidaire Dealers will show that unless the prospect saves in all 4 ways she may not save at all! What a convincing selling demonstration! . . . Built into this aggressive new campaign is the tremendous power of more extensive and intensive advertising, new, exclusive features, and great new sales aids. It will win for Frigidaire Dealers continued sales leadership in 1938! Frigidaire Division, General Motors Sales Corporation, Dayton, Ohio.



FRIGIDAIRE DEALERS ARE NOW HOLDING  
COLORFUL SPRING SHOWINGS OF THE NEW  
FRIGIDAIRE WITH NEW SILENT METER-MISER,  
DRAMATIZING THE MANY TIME AND  
MONEY-SAVING FEATURES THAT HAVE  
ALREADY WON THE APPROVAL OF  
THE BUYING PUBLIC EVERY-  
WHERE

### Frigidaire's National Advertising Starts February 15th in these publications:

The Saturday Evening Post  
Ladies' Home Journal  
Woman's Home Companion  
Good Housekeeping  
American Magazine  
American Home

Cosmopolitan  
Collier's  
Liberty  
Life  
McCall's  
True Story

Better Homes & Gardens  
Holland's  
Household  
Woman's World  
Graduate Group  
Electricity on the Farm

Plus hundreds of the country's leading newspapers . . .  
thousands of colorful billboards



## Major Appliances

### Faith Richards Heads Bendix Education

SOUTH BEND, Ind.—Faith Richards, lecturer and instructor in the domestic equipment industry, has been appointed home laundry educational supervisor for Bendix Home Appliances, Inc., according to an announcement by Judson S. Sayre, vice president in charge of sales.

Miss Richards will work through distributors in giving demonstrations and instruction in modern laundry methods before dealers and salesmen. She also will conduct educational courses for salesmen.

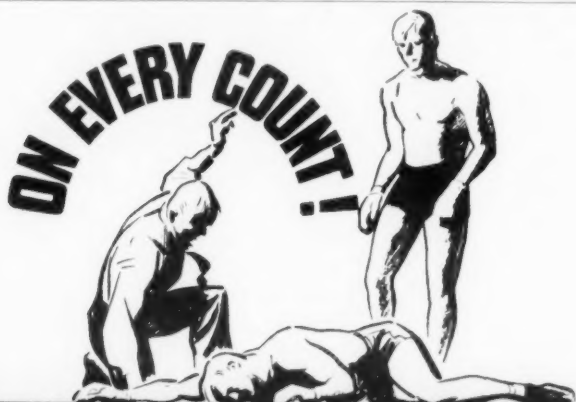
For the past two years, Miss Richards had been sales promotion and traveling trade representative of the home laundry division of Fairbanks, Morse & Co.

### 1,820,877 Home Laundry Units Were Shipped During 1937

CHICAGO—Shipments of 1,820,877 home laundry appliance units, including 1,642,019 washers and 178,858 ironers, have been reported for 1937 by J. R. Bohnen, secretary of the American Washing Machine Manufacturers' Association.

The total is a decrease from the shipments of 1936, the association's highest year, when 1,909,416 units, comprised of 1,729,135 washers and 180,281 ironers, were reported.

Washers retailing at \$70 or more amounted to 42.6% of all washers shipped in 1937, Mr. Bohnen announced, as compared with a 31.9% proportion in 1936.



## It's Combustioneer

AUTOMATIC COAL BURNER

### THE LEADER—ALL THE WAY

On every count the decision goes to Combustioneer as it puts the Koyo on competition and leads all the way in the field of Automatic Coal Heating.

**1 IT'S Combustioneer —THE PIONEER**  
Proved engineering—research—and manufacturing and testing facilities under one roof protect your reputation.

**2 IT'S Combustioneer —THE PRECISION-BUILT**  
Highest standards of precision-built manufacture insure dependable and economical operation.

**3 IT'S Combustioneer —THE SALES LEADER**  
Nine exclusive and demonstrable construction and convenience features give you unquestioned sales leadership.

**4 IT'S Combustioneer —THE PROFIT MAKER**  
Sound price and discount structure, powerful sales plans and national advertising assure you bigger, quicker profits. Write for details to Combustioneer, Springfield, Ohio.



**Combustioneer**  
AUTOMATIC COAL BURNER  
FOR HOMES, APARTMENTS AND FACTORIES  
DIVISION OF THE STEEL PRODUCTS ENGINEERING CO.

## Washer Suggestion Contests Offer Profitable 'Gamble' For Department Store Clerks

OAKLAND, Calif. — Store-wide washer suggestion contests held twice a year, in which all employees are given an opportunity to earn bonuses ranging from 50 cents to \$5, increase volume for these months 50% or better in the electrical appliance department of the Jackson Furniture Co. here.

Every time any employee outside of the appliance department brings about a washer sale through a suggestion, he is allowed to pull a sticker off the contest board. Under each sticker is written the amount of his bonus—ranging from 50 cents to \$5. The element of uncertainty as to what a clerk will earn in bonus money each time he makes a sale helps create strong interest.

The contest applies to all models in the washer line, regardless of price, and to all employees outside of the appliance department, not merely selling employees. Cashiers make a great many sales suggestions to customers coming in to meet instalments on other merchandise.

The contest board is a white painted wood section, measuring 15

by 24 inches. On it are 100 red stickers, each covering a bonus figure. The amount represented on the board is \$100, divided up in amounts of 50 cents, \$1, \$2, \$3, and \$5.

Clerks may get credit for their suggestions in one of two ways—by bringing prospects to the department, or by giving them a note of introduction. Actual selling is done in the appliance department.

Contests run for one month. At a store-wide meeting once a week, employees having bonus money coming remove their stickers and are paid in cash. More interest is created by cash payments weekly than by letting the amount pile up, the management discovered.

"We've tried numerous types of contests and find this one brings more results than anything else," says A. L. Dean, electrical appliance buyer. "The last one, held in September, stepped up washer sales more than 50%. We'll hold another in February, and expect even greater returns."

### 'Charm Home' Erected In Los Angeles

LOS ANGELES—As a public display to increase interest in the modern electrical way of living, a "Charm" home completely equipped with electric appliances and furnished throughout even to silverware has been built in Westwood, a suburb near here, by Frank D. Vincent, owner of Vincent Electrical Appliance Co., local General Electric dealer.

From the more than 4,000 visitors who have inspected the home during the first three weeks of its display, Mr. Vincent has drawn many prospects for various appliances and has made a great many sales, particularly of ranges.

Kitchen of the home is patterned after the G-E layout being advertised throughout the country. Equipment includes a refrigerator, range, water heater, dishwasher, Disposall, electric mixer, roaster, washing machine, and ironer.

Thermador electric heaters are installed in the home, fan-type in the living rooms and bedrooms, and "head to heels" type in the two bathrooms.

Mr. Vincent plans to build two more similar all-electric homes.

### 'Select-A-Speed Calrod' Features New Hotpoints

CHICAGO—A new heating unit called the "Select-A-Speed Calrod," providing five controlled degrees of heat for all surface cooking operations, has been announced as standard equipment on all 1938 Hotpoint electric ranges by Edison General Electric Appliance Co., Inc.

Designed and developed by Hotpoint engineers, the Select-A-Speed Calrod offers a range of cooking speeds from a warming heat of 80 watts to a high speed heat of 1,300 watts.

Intermediate speeds are the half, 650 watts, for frying, steaming, boiling, and stewing; the quarter, 325 watts, for slow frying, cooking dried vegetables, and continuing steaming; and the thrift, 160 watts, a slow, simmering heat to continue steaming or to cook welsch rarebits and omelets.

Calrod switch controlling the speeds is a bar which turns in either direction. The units themselves are part-way removable to provide access to the drip pans underneath.

They are permanently attached to steel supports, and are equipped with bell-shaped terminal guards.

### Maytag Calls 1,000 Back To Work

NEWTON, Iowa — After having been shut down for several weeks, Maytag Co., local washing machine manufacturer, has called 1,000 employees back to their jobs. Plant officials have stated that additional workers will be recalled as fast as increased operations warrant such action.

### County Agents Promote 'Better Kitchens' Contest In New Hampshire

LACONIA, N. H.—In a "better kitchens" contest from which electric appliance dealers expect to garner many sales, 32 Belknap county housewives are being encouraged by the county home demonstration agent to modernize their kitchens.

Each contestant's kitchen was appraised and scored at the beginning of the contest. On July 15, the kitchens again will be appraised and scored, and the owners of the three which have shown the most improvement will be awarded prizes. They also will be eligible to compete in the state contest.

### W. L. Sayre Heads District Sales For Edison G-E In New York

CHICAGO—W. L. Sayre has been appointed district sales manager of Edison General Electric Appliance Co., Inc., in the New York district, according to an announcement by R. W. Turnbull, vice president and general sales manager of the company.

Mr. Sayre joined the General Electric Supply Corp. in 1933, and later served as district manager in the Hotpoint refrigerator division of the General Electric Co. in Cleveland. He became a refrigerator specialist in the New York district when this division was absorbed by the Edison G-E company.

Following his discharge from service in the U. S. Navy after the war, in which he was a radio communication officer, Mr. Sayre established the Sayre-Level Radio Co. in Philadelphia as a radio wholesale firm.

Five years later he sold his interest to accept a position as New York state district manager for Crosley Radio Corp. After three years he was appointed central division manager for Crosley, and then managed the Crosley wholesale distributorship in New York.

From Crosley Mr. Sayre went to Grigsby-Grunow Co. as district manager for New York, and later joined the Pitcairn Autogiro Co. as a special sales representative.

### Johnson To Be Hotpoint Range Specialist In Cleveland Area

CLEVELAND—Jesse P. Johnson, former head of the commercial cooking and baking department of the Tennessee Electric Power Co., has been appointed commercial cooking and baking specialist in the Cleveland district of Edison General Electric Appliance Co., Inc., according to an announcement of W. H. Bonduant, district manager in charge of the Cleveland office.

Mr. Johnson has served as a representative for Frigidaire division, General Motors Sales Corp., in Alabama. He is a graduate of the University of Alabama.

## New Kelvinator Range Models Featured By Divided Cooking Tops

DETROIT — Two new electric range models, featuring divided cooking tops and popularly priced to meet market demands, are announced for immediate merchandising by Pierre L. Miles, electric range sales manager for Kelvinator division of Nash-Kelvinator Corp.

Divided cooking tops on the new models are in line with popular trends, states Mr. Miles, and together with the other models in the Kelvinator line, afford consumer choice of whichever type of cooking top is preferred. By dividing the cooking top on these shorter ranges, crowding of cooking utensils on top of the stove is avoided without in any way cutting down the oven space.

### HIGH-SPEED UNITS

Kelvinator-Chromalox high speed surface units are a feature of both of the new models, as are the built-in Scotch kettle and interval timer. Three-heat switches give maximum flexibility and utilize the inner ring of surface units. A one-piece tabletop and back plate assures easy cleaning, and a deep (3-inch) back flange serves as a base for an electric oven timer or for condiment sets.

The roomy, single unit oven, with the smokeless broiler rack, a feature of the entire Kelvinator electric range line, is also an integral part of the new models.

A convenient cooking lamp top is supplied as regular equipment on Model ER-31, and is optional at a nominal charge on ER-21. An attractive two-piece condiment set is furnished with each range.

### CONVENIENCE OUTLET

A convenience outlet in the center of each model's control panel permits the handy attachment of a mixer or other electrical accessory. An oven switch and thermostat, with oven pilot glowing through a translucent dial, enhance the salability of these 1938 Kelvinator-engineered ranges, designed by C. C. Thomas, Kelvinator's chief cabinet designer.

On ER-31 a roomy, easy-sliding storage drawer provides space for boilers, ladles, pans, and other cooking utensils.

The new models replace the former Kelvinator units ER-20 and ER-30.

"Production of these two new ranges at this time, rounding out the Kelvinator line, is evidence of our confidence in the rapid and continuous growth of the electric range business," said Mr. Miles. "A survey of 1938 range promotion plans makes it clear to the most casual observer that the various manufacturers are taking steps far in advance of anything hitherto attempted to promote range sales on an unprecedented basis."

### New Radiant Convection Heater Marketed By General Electric

BRIDGEPORT, Conn. — A new heater of the radiant convection type, known as the "Arizona" heater, has been announced by the General Electric appliance and merchandise department. It is patterned in a semi-circular style with a polished reflector and a dark brown wrinkle finish.

Durable nickel-chromium wire heating units provide quick, clean, and odorless heat, while a convenient handle permits it to be carried from place to place. The approved cord is permanently attached and has a G-E molded rubber attachment plug. The heater stands 18 inches high, and is rated 1,320 watts, 115 and 125 volts. List price is \$8.95.

### Gautemala Builders Interested In U. S. Kitchen Equipment

GUATEMALA, Guatemala—American manufacturers of electric washing machines, metal sinks, and other kitchen equipment, bathroom fixtures, metal furniture, and wall, door, and recess beds have been invited to send catalogs to Byron Zadik, Litografia Byron Zadik y Cia., 9a Calle Oriente No. 31 here, according to a report from the local office of the American attaché.

Mr. Zadik is one of a group of local business men planning to construct a number of small or medium-sized American-style homes here.



# HERE'S TODAY'S COMPLETELY MODERN ELECTRIC RANGE!



This NEW 1938 General Electric range is *completely* modern—with many exclusive General Electric features. It's new in brilliantly beautiful styling! New in automatic features! New in economy features! New in downright dollar-for-dollar value! And it will give a big boost to electric cookery.

## WOMEN WILL WANT THESE 3 Thrifty Features



**1 TEL-A-COOK LIGHTS.** Instantly inform when and where the current is on, and indicate the degree of heat being applied. This signal saves current by visible warning if switch is carelessly left on. A new and exclusive G-E feature.



**2 SELECT-A-SPEED** Calrod Cooking Unit. Five cooking heats from one unit, with one switch! Hi-Speed, Half-Speed, Quarter-Speed for normal needs; Thrift-Speed for simmering; and for keeping food warm, a low Warm-Speed.



**3 TRIPL-OVEN.** Three-ovens-in-one. Small Speed Oven for single-shelf cooking; pre-heats faster and greatly decreases amount of current used. Master Oven of extra large capacity. Super-Broiler with greater flexibility in speed and capacity.



## ONE OF SIX NEW MODELS IN GENERAL ELECTRIC'S SENSATIONAL NEW 1938 LINE

THE spectacular 1938 G-E Chancellor Range shown above is NEWS. Bigger NEWS is the announcement of five other brand new General Electric models of advanced design and appointments. Many of the following features will be found in all new models:

Tel-A-Cook Lights. Select-A-Speed Calrod Cooking Unit. Tripl-Oven. Porcelain Unitop. No-Stain Vent and Oven Moisture Control. Adjustable Non-Tip Sliding Shelves. Automatic Interior Oven Light. Automatic Oven Timer. Built-In Minute Minder Chime. Generous Sized Thrift Cooker. Electrically Welded Steel Bodies. Large Storage and Warming Compartment.

Models and prices for practically all income groups—cracking good sales promotion and national advertising support—liberal finance plans—plus public confidence in the General Electric name—round out

a range sales opportunity you should investigate! Get aboard the Mainline and go places with General Electric in 1938! See the G-E distributor *today*.

General Electric Co., Specialty Appliance Division, Nela Park, Cleveland, Ohio



G-E Refrigerators, Ranges, Electric Sink with Dishwasher and Disposall, Water Heaters, Washers, Ironers, also "Packaged" Commercial Refrigeration Products.

**THE COMPLETE LINE OF ELECTRICAL HOME APPLIANCES**—every one proved by performance, tested by time. Backed by 60 years of electrical manufacturing experience. "Go-to-Town" on the Mainline in 1938! It's another G-E year.

# GENERAL ELECTRIC



## When Frigidaire Factory Men Get Into Show Business Each Year To Dramatize Their Plans



(1) Diminutive "Mickey" Farrell, genius behind Frigidaire displays, exhibits, and convention stage effects, has a satisfied smile on his pan as he watches the cast go through its well-drilled paces. (2) "Critics" Carl Copp, general sales manager (with hat on) and Frank Pierce,

household division manager and convention chairman, talk things over at a preview. (3) The "critics" indicate their approval to Ellsworth Gilbert

(not in picture), Frigidaire convention director. (4) "You have to save in all four ways" is one of Frigidaire's themes this year, and here L. A.

Clark, Frigidaire household advertising manager, shows how a leak in any of the four ways may result in the loss of savings in a refrigerator.

## Specialty Selling Methods

### Theater Promotional Programs Costing \$40 Each Sell \$14,000 Worth Of Appliances In Month

AUGUSTA, Ga.—Within one month after it had sponsored four promotional theater programs built around General Electric Co.'s commercial film, "The Happy Woman," South Electric Appliances, Inc., G-E distributor, determined the names and appliance needs of 1,800 prospects and sold \$14,000 worth of merchandise, relates H. A. Deas, sales promotion manager.

Over-all cost of each show was approximately \$40; combined attendance at the four shows was 2,800.

Printed invitations to these matinee programs were sent to a list of selected prospects.

Schedule for each program was as follows: news reel; cartoons; technical musical revue; 15-minute intermission, during which a representative of the distributorship told the audience that each woman present would receive a free souvenir gift at the close of the show; and then the G-E commercial film.

Also during the intermission, cards were passed out on which the women were requested to write their names and addresses, and to indicate what appliances they already owned or in which ones they were interested. These cards qualified the women

for receipt of the grand prize, which differed at each performance. Prizes offered included a pressure cooker, a covered roaster, solid copper dresser set, and a small electric iron. No prizes were awarded to anyone who did not fill out a prospect card.

Names obtained from these prospect cards were parceled out to district managers on the basis of the prospect's location. District managers turned these names over to their salesmen with instructions to make calls as soon as possible.

"These follow-up calls are an integral part of the scheme," Mr. Deas declared, "and at least 50% of the benefit derived from the shows would be lost unless these calls were made. Just seeing that people come to the shows, enjoy themselves, and then go home again is not enough. If follow-up calls are not made, the people go home and soon forget all about the affair."

"By no means the least of the benefits derived from this promotion was the way in which it stimulated the morale of our salesmen," he concluded, "for within 10 days we provided them with more real prospects than they could have secured for themselves within eight months."

## Two Leading Oakland Dealers Find Small Groups In Cooking Schools Get Better Results

OAKLAND, Calif.—Two of this city's leading refrigerator and electrical appliance dealers have greatly increased the selling effectiveness of their electric kitchens by abandoning elaborate cooking schools in favor of small attendance demonstrations.

Like a good many other stores, the John Breuner Co., one of the city's leading furniture houses, and the H. C. Capwell Co., Oakland's largest department store, found that few sales resulted from large cooking schools in which the department was thronged with people.

### LOSE PERSONAL CONTACT

All chance for personal contact work was lost. Costly outside follow-up work was necessary to contact those in attendance who were actually interested. And a large percentage of the people attracted were not prospects anyway.

Breuner's has solved the problem by holding "cold cooking classes," with admittance only by invitation. These events are advertised only by postcards sent to a carefully selected list of "hot" prospects. Each salesman is asked to select from his file the names of the people he thinks would be most likely to buy a refrigerator if they were brought into the store in this way.

### SMALL ATTENDANCE

The attendance desired is only 10 or 12 people—with more than that number, any chance for personal conversation is lost. Percentages of returns on invitations were checked, and now just enough invitations are sent out to bring that average attendance.

One specific subject is mentioned in the invitations—one time it may be "Preparation of Cold Salads," the next time, "Making Frozen Desserts," the third, "Using Leftovers to Good Advantage." The main demonstration is on the advertised subject, but if women in the audience want to ask questions along other lines, they are given the opportunity.

### INVITATION SCHEDULE

The first invitation is sent out about one week in advance of the "class." Three days before the demonstration, a reminder card is used. Returns have been greatly increased by use of these second cards.

Another thing that has stimulated interest in the events, and helped from a selling standpoint, is the offer of a gift to every woman in attendance. A 10-cent bowl or some other small article is used for this purpose. When the gift offer is used, the card must be presented to obtain it.

Thus, the home economist in

charge has a chance to get every woman's name at the outset. A glance at the address side of the card enables her to call the prospect by name and also to determine what salesman she "belongs to." Before the demonstration, each salesman gives the home economist a list of the names he turned in.

The small size of the group enables the home economist to have a personal chat with every woman. If the visitor appears to be a real prospect, a pre-arranged signal to the salesman brings him into the picture. He apparently "just happened to notice" the prospect and "dropped over to say 'hello.'" As a result of this technique, nearly every "cold cooking class" brings two or three immediate refrigerator sales.

### APPLIANCE DEMONSTRATION

While the women are in the department, they also are given a brief demonstration of every appliance there. If no hot foods are to be cooked, an excuse is found to boil water or use the range for some other purpose. Dishes are placed in the dishwasher as they are emptied, so that every woman will see it operate. Wherever possible, visitors themselves are given a chance to use the controls on the different appliances.

One feature of the Breuner kitchen which makes it particularly useful for demonstration work is the fact that every appliance is connected. This includes an electric water heater which keeps a supply of hot water constantly available. When a visitor turns the faucet, she gets results immediately.

The department has completed arrangements to have the kitchen used once a week by the home economics expert of an Oakland newspaper in making recipe tests. This fact will not be advertised generally, but will be capitalized on in much the same way as the "cold cookery" classes.

### MONTHLY 'OPEN HOUSE'

The electrical appliance department of Capwell's has solved its problem in a slightly different way—and with different results. No more cooking schools are held as such. But the last week in every month, the department holds a sort of "open house" in the model kitchen, with a well-known home economist in charge.

Newspaper and shopping news advertising is used, but plays up the fact that the home economics woman will be in the department daily for the entire week, and invites women to come in at their convenience.

Large space advertising when the plan was first inaugurated made the monthly demonstrations so well known that now very little promo-

tional work is needed to get regular attendance.

So that there will always be something of interest to show visitors and talk to them about, the home economist keeps busy in the kitchen most of the time—preparing various cold and hot dishes. However, no definite program is carried out. Aim is to conduct the demonstrations in "clinic" fashion. If a visitor has a problem, the demonstrator takes her into the kitchen and actually shows her how to solve it.

The demonstrator is more than just a "cooking school expert." She is an expert saleswoman and personally closes a great many deals. When several women are on hand at one time and she can't "follow through" with one prospect, she signals a salesman to take up the deal.

But in every case, she determines whether or not the woman is in the market for a refrigerator or other appliances, and gets her name. The demonstrator has a sales quota to maintain, the same as anyone else on the floor.

One of the most effective features of the refrigerator demonstration in the kitchen is the showing of dated foods. The box used here is kept fully stocked with meats, vegetables, eggs, butter—everything found in the average refrigerator.

Every item is individually dated. However, no foods are kept in the refrigerator for more than one week. Experience showed that few women ever attempt to preserve them beyond that limit, and that longevity tests have little appeal.

An unusual feature of the Capwell model kitchen is the inclusion of a high-priced washing machine along with the standard units. Display of the unit in this location makes the customer see it as something more than just a "basement" appliance, and helps justify its price in her eyes. It is demonstrated along with the other appliances.

## Apex To Award Trophy For Best Sales Job

CLEVELAND—To spur competition for 1938 appliance business among members of its own sales organization, Apex Rotarex Corp. has set up a "1938 Apex Sales Trophy" award as the goal of an all-year sales contest between the different sales divisions of the company.

The trophy will be awarded monthly to the Apex sales division that leads in sales for the period, with permanent possession of the prize going to the division that wins it the most months during the year.

In addition, four cash awards will be made each month to the salesmen finishing highest in the winning division.

## Little Rock Dealer Has Kitchen-Planning Service

LITTLE ROCK, Ark.—Southern Refrigeration and Electric Co., local Hotpoint appliance dealer, has opened a new store at 117 W. Fourth St., featuring a kitchen-planning service.

Leonard E. Ellenbogen, former owner of Capital City Hat Co., is general manager of the new store. Robert O. Harris, experienced air-conditioning and electrical appliance salesman and a graduate of Columbia university, is sales manager. The company will employ 10 men in its new store.

## ESOTO V-METH-L

# BEACONS OF DEPENDABILITY

## LIGHTING THE WAY TO SUCCESSFUL REFRIGERATION

Successful refrigeration depends on the performance of the refrigerants used. Use ESOTO and V-METH-L, the two outstanding refrigerants known for their uniformly high quality and purity. They can be trusted to give the most efficient service.

ESOTO and V-METH-L are both available promptly throughout the world.

## VIRGINIA SMELTING CO.

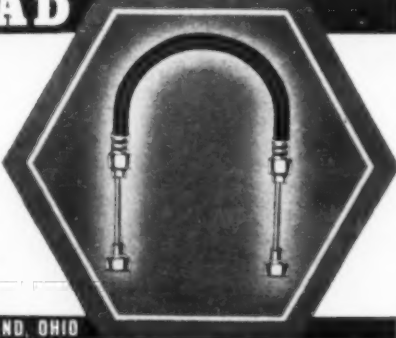
WEST NORFOLK, VIRGINIA

## WEATHERHEAD CHARGING HOSE

- Flexible conductors for all refrigerants.
- Complete range of sizes and lengths.
- Six inches of copper tube at each end.

## GENUINE WEATHERHEAD REFRIGERATION PARTS

WEATHERHEAD • 300 E. 131 ST. • CLEVELAND, OHIO





## Substituting Mortgage For Conditional Sales Contract Cited As Credit Selling Abuse

DETROIT—Among the abuses practiced by some firms selling merchandise and automobiles on installment credit terms, few work a greater hardship on unsuspecting buyers than the practice of having them sign a supposed conditional sales contract which is in reality a mortgage on some other goods owned by them, a study of cases on record in the conciliation division of Wayne County's Common Pleas Court reveals.

In many cases, the worth of the goods mortgaged in this manner is considerably greater than that of the merchandise originally purchased on the time payment plan. Instances are not uncommon in which a car has been taken over to satisfy defaulted payments on tires purchased for use on it.

Cases cited below show two instances in which the purchasers' cars were attached because of defaulted payments on a radio. Investigation of the second case revealed that the purchaser of the car had been the victim of "dishonest collateral," a credit selling malpractice discussed in last week's NEWS.

Carelessness in checking up on a purchaser's ability to pay is another pitfall into which many credit selling firms fall, ostensibly because of their over-anxiety to do a large volume of business, without much regard to where it comes from. A case illustrating this rather common selling fault is cited below.

Letters to purchasers whose accounts are overdue, hinting at garnishment action and otherwise intimating that their jobs will be placed in jeopardy unless they pay up, are another favorite—and successful, for the most part—"collection method" employed by some credit firms.

In this week's case covering that practice, the account had been dropped for three years, while the debtor had been out of work. As soon as the store found out that the man had obtained employment, however, it lost no time in reopening the account. Apparently the idea was to scare the man into paying up, for fear of losing his new job because of an old debt.

### CASE NO. 3: A THEORY IN REVERSE

This is an instance in which a store sold a radio on time payments on the theory that it was a necessity, and later took it back on an execution on the reverse theory that it was a luxury, and as such not exempt.

After conference, the attorney for the company agreed to cancel the judgment obtained against the defendant, and to allow the family to keep an electric washer which had previously been purchased on time payments.

When the washer was purchased, an allowance of \$5 was made on the old washer owned by the family, and it was agreed to pay \$5 per month on the balance of \$50. Payments were made for four or five months, when the family bought a radio valued at \$75.

The wife had the radio sent out on approval, and, as she supposed, signed a receipt for it. A few days later, she was told she had signed a contract.

In July of the following year, the company sued for defaulted payments, and a judgment of \$73 and \$2 costs was taken against the husband. The woman entered judgment in conciliation court, and began making payments.

Two months after this, the radio was taken on an execution and sold for \$14. Of this, \$4 went to a constable, and \$9.94 on the judgment. The defendant said she had received no notice of the sale.

Through the court's efforts, a compromise settlement was made.

### CASE NO. 4: A CAR FOR A RADIO

In this case, the defendant bought a "standard deluxe" radio from the plaintiff company for \$60. It was paid down to \$47.

Defendant claimed the radio would not work properly, but the company would not take it back. When his payments were in default, they took over his car. This was the first time the defendant realized that, in purchasing the radio, he had signed a mortgage.

He was still paying for the car, and owed about \$150 on it. The court advised the man to seek the services of a lawyer. The store asked \$62.50 to release the car.

### CASE NO. 5: ANOTHER RADIO SALE

In this case, the defendant purchased a radio from the store in question, price of which was to be \$89.95 and \$2.70 tax, a total of \$92.65. He paid \$5.65 down, leaving a balance of \$87.

He was told he would have to sign a note for the balance, which he did, only to learn that the note was made out for \$100.56.

He made payments totaling \$11, and after he had defaulted, a judgment was taken against him for \$89.56 and \$2 costs.

Defendant claimed the radio had

never given real satisfaction, although he had repair men at the house on various occasions to fix it.

Judgment was entered in conciliation court, and the defendant agreed to pay off his balance at the rate of \$2 per week.

### CASE NO. 6: HIGH-PRESSURE SELLING

Defendant in this case was a Ukrainian with four motherless children, employed by a company in the automotive industry.

A salesman for the plaintiff company sold him a deluxe model radio for \$221.40, without a down payment of any kind, by telling him he could try the radio at home on a 30-day trial, and picturing to him the prospect of hearing programs from all over the world, including stations in his own native land.

After the radio had been installed in his home, defendant made several complaints about it, since, he said, he could get only local stations, the same as with a \$10 set. Several adjustments were made by the com-

pany, but it refused to take back the radio.

Later the company started suit against him. Defendant made no appearance, and was duly defaulted for part payments amounting to \$41 and \$2 costs.

Shortly afterwards, an execution was taken against him, and his seven-year-old car was taken by a constable. The constable learned, however, that the car had a mortgage on it in the amount of \$141, which far exceeded its value, so he turned the car back to the defendant upon payment by him of \$3 costs.

The case came into the conciliation division, and the defendant was to make a payment of \$9 every two weeks.

While the man was working and two of his children were in the house alone, the store sent a truck to the house and took back the radio.

Investigating the defendant's purchase of the car, the court found that the man had bought a 1930 model paying \$27 in cash and signing 12 notes at \$11.80 on the balance, or a total of \$168. Cash value of the car is possibly \$60.

### CASE NO. 7: OVER-EXTENSION OF CREDIT

As an instance of how credit is extended without proper investigation as to the purchaser's ability to pay, conciliation court records reveal the following, in the case of a Negro worker with a wife and seven children, employed by a motor company:

(Credit extensions are given by number. Second column shows amount paid on account, and third column the amount of judgment obtained against the man.)

Account No. 1.....	\$4.00	\$ 16.98
Account No. 2.....	6.00	35.55
Account No. 3.....	6.00	62.56
Account No. 4.....	6.00	48.34
Account No. 5.....		21.16
Account No. 6.....		166.75
Account No. 7.....		34.38

Total Judgments \$365.63

Total Payments 22.00

Balance \$343.63

With this load of debt hanging over his head, the man will be years paying off the judgments against him. In the meantime, he's "out of the market," as far as any additional purchases are concerned.

# EXTRA VALUE THAT YOU CAN DEMONSTRATE AND PROVE!

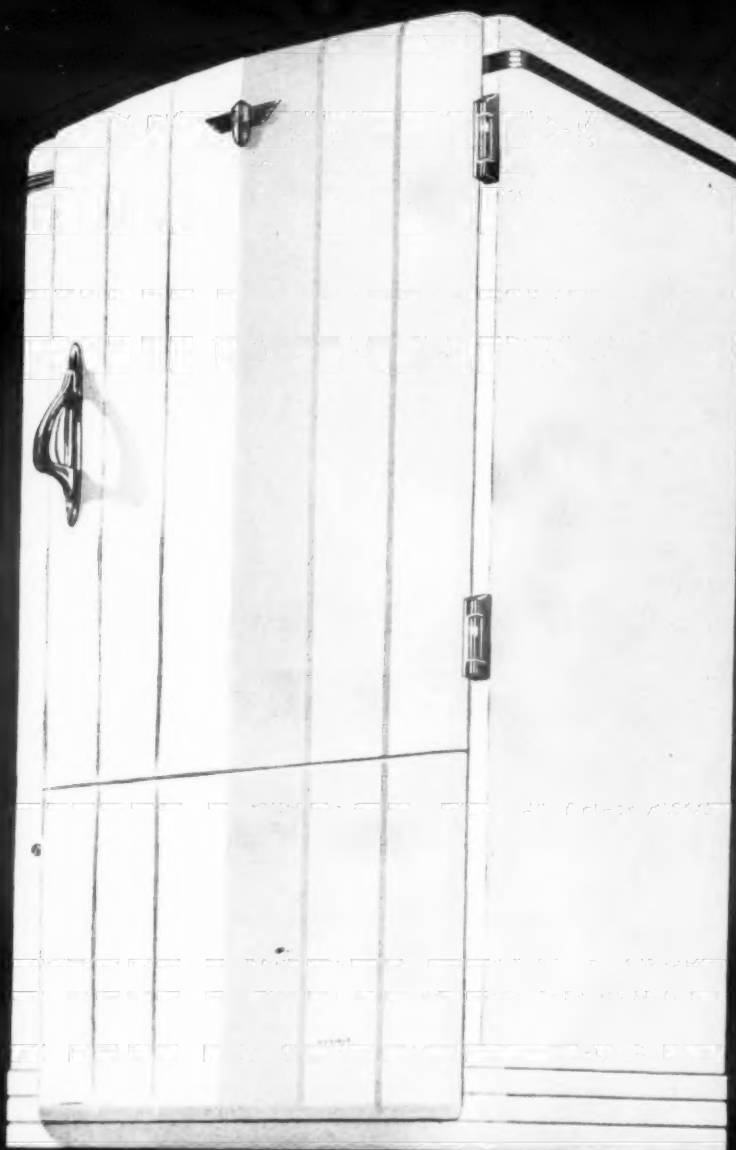
DEALERS everywhere say this great new Stewart-Warner is "made to order" for easier, more profitable selling. It's made in the only refrigerator factory completely re-tooled for 1938. And it gives you more to demonstrate—more improvements that prospects can see and believe—than any other refrigerator made, regardless of price! Among them are...

- ★ Famous exclusive SAV-A-STEP
- ★ Exclusive patented SLID-A-TRAY
- ★ Daring thrift-proving ECON-O-LITE
- ★ New Porcelain COLD STORAGE CHEST
- ★ Exclusive SNAP-OUT CUBE TRAY
- ★ 16-Point Lighted COLD CONTROL
- ★ Money-Saving VAPOR-SEALED CABINET
- ★ Big Super-Powered SLO-CYCLE UNIT
- ★ Ageless GLASS WOOL INSULATION

IN ADDITION, Stewart-Warner offers its special sales-making retail finance plans...

PLUS more than doubled advertising support, including Coast-to-Coast broadcasts and smashing magazines ads...

PLUS the newest and most productive sales, merchandising and display plans and materials we've ever offered.



## STEWART-WARNER

### SAV-A-STEP REFRIGERATOR



# Sales Figures

## Nema Manufacturers Report Sales Of 2,394,659 Household Units To Distributors In 1937

The following 15 member companies of the Refrigeration Division of the National Electrical Manufacturers Association (Nema) reported household refrigerator sales for the year 1937: Apex Electrical Mfg. Co., Crosley Radio Corp., Fairbanks, Morse & Co., Frigidaire Corp., General Electric Co., Gibson Electric Refrigeration Co., Kelvinator Div. Nash-Kelvinator Corp., Leonard Div. Nash-Kelvinator Corp., Norge Div. Borg-Warner Corp., Servel, Inc. (export only), Stewart-Warner Corp., Sunbeam Electric Mfg. Co., Uniflow Mfg. Co., Universal Cooler Corp., and Westinghouse Electric & Mfg. Co. Member companies not reporting included: Jomoco, Inc., Merchant & Evans Co., and Sparks-Withington Co.

The sales of the reporting companies do, however, include units manufactured for the following concerns: Major Appliance Corp., Montgomery Ward & Co., Potter Refrigeration Corp., and Sears, Roebuck & Co.

SALES FOR THE YEAR 1937						
Domestic		Canadian		Other Foreign		Total World
Quantity	Value	Quantity	Value	Quantity	Value	Value
<b>Lacquer (Exterior) Cabinets Complete</b>						
1. Chest	7,450	351,376	55	1,187	\$ 60,881	
2. Less than 3 cu. ft.	226	13,690				
3. 3 to 3.99 cu. ft.	48,158	2,954,863	698	25,925	1,588,339	
4. 4 to 4.99 cu. ft.	290,025	19,465,267	12,126	814,812	51,380	3,522,840
5. 5 to 5.99 cu. ft.	536,438	42,676,640	10,336	843,271	27,912	2,362,766
6. 6 to 6.99 cu. ft.	758,730	65,577,400	5,178	470,138	14,649	1,368,049
7. 7 to 7.99 cu. ft.	192,904	19,875,135	1,414	141,899	6,818	741,038
8. 8 to 8.99 cu. ft.	66,098	7,203,855	151	15,618	2,130	259,187
9. 9 to 9.99 cu. ft.	928	117,520	3	361		
10. 10 to 12.99 cu. ft. and up	34	7,199				
11. Total Lacquer	1,900,991	158,242,945	29,961	2,330,399	130,001	9,903,100
<b>Porcelain (Exterior) Cabinets Complete</b>						
12. Up to 4.99 cu. ft.	4,912	376,789	267	21,237	632	50,938
13. 5 to 5.99 cu. ft.	58,030	5,208,283	848	77,894	3,109	281,572
14. 6 to 6.99 cu. ft.	130,014	13,061,411	411	42,206	1,991	207,356
15. 7 to 7.99 cu. ft.	45,183	5,047,442	179	20,323	1,343	152,605
16. 8 to 8.99 cu. ft.	32,094	3,981,367	115	14,485	1,378	182,547
17. 9 to 9.99 cu. ft.	3,444	663,489	19	3,723	369	63,309
18. 10 to 12.99 cu. ft. and up	6,236	1,252,247	53	10,431	642	133,213
19. Total Porcelain	279,913	29,591,028	1,892	190,299	9,464	1,071,540
20. Total—Lines 11 and 19	2,180,904	187,833,973	31,853	2,520,698	139,465	10,974,640
<b>Separate Systems</b>						
21. 1/2 Hp. or Less	1,964	84,308	2,753	92,098	11,595	532,162
<b>Separate Household Evaporators</b>						
22. 1/2 Hp. or Less	20,467	168,846	637	9,382	5,021	64,863
23. Total—Lines 20, 21, 22	2,203,335	188,846	35,243	156,081		
<b>Condensing Units</b>						
24. 1/2 Hp. or Less	9,613	560,227	304	20,234	3,596	229,745
25. Cabinets—No Systems	8,844	326,845	6*	115*	993	45,847
26. Total Household		\$188,974,199		\$2,642,297		\$11,847,257

## Nema Household Sales To Distributors In December Total 113,132

SALES FOR DECEMBER, 1937						
Domestic		Canadian		Other Foreign		Total World
Quantity	Value	Quantity	Value	Quantity	Value	Value
<b>Lacquer (Exterior) Cabinets Complete</b>						
1. Chest	4	366	4*	3	\$ 146	
2. Less than 3 cu. ft.						
3. 3 to 3.99 cu. ft.	2,399	152,607	8	492	682	43,424
4. 4 to 4.99 cu. ft.	12,061	808,964	208	14,132	2,947	207,688
5. 5 to 5.99 cu. ft.	27,862	2,306,632	740	56,819	2,094	183,539
6. 6 to 6.99 cu. ft.	29,884	2,796,151	625	52,364	1,068	103,806
7. 7 to 7.99 cu. ft.	10,643	1,106,074	237	21,942	473	51,227
8. 8 to 8.99 cu. ft.	2,606	310,827	79	7,801	186	22,831
9. 9 to 9.99 cu. ft.	9	1,147	3	361		
10. 10 to 12.99 cu. ft. and up						
11. Total Lacquer	85,468	7,482,768	1,896	153,717	7,453	612,661
<b>Porcelain (Exterior) Cabinets Complete</b>						
12. Up to 4.99 cu. ft.	254	19,478	1	71	13	995
13. 5 to 5.99 cu. ft.	3,651	336,763	9	744	186	17,313
14. 6 to 6.99 cu. ft.	7,117	746,098	10	973	136	14,340
15. 7 to 7.99 cu. ft.	3,084	348,424			110	12,654
16. 8 to 8.99 cu. ft.	1,884	244,824			176	23,621
17. 9 to 9.99 cu. ft.	328	65,432			37	6,716
18. 10 to 12.99 cu. ft. and up	317	72,985	4	841	51	9,860
19. Total Porcelain	16,635	1,834,014	24	2,629	709	85,499
20. Total—Lines 11 and 19	102,103	9,316,782	1,920	156,346	8,162	698,160
<b>Separate Systems</b>						
21. 1/2 Hp. or Less	1,095*	62,874*	23*	1,356*	1,163	57,539
<b>Separate Household Evaporators</b>						
22. 1/2 Hp. or Less	873	6,866	26	388	3	123
23. Total—Lines 20, 21, 22	101,981	69,740	1,923	156,081		
<b>Condensing Units</b>						
24. 1/2 Hp. or Less	230	14,470	8	529	318	20,165
25. Cabinets—No Systems	13*	601	23*	943*	59	2,878
26. Total Household		\$9,275,845		\$154,964		\$778,865

\*Includes both sales and credits of more than one company.

## 250,964 Commercial Units Sold To Distributors During 1937 By 14 Companies

The following report of commercial refrigerating and air-conditioning equipment sales for the year 1937 was made to the Commercial Refrigeration Section of the National Electrical Manufacturers

Association (Nema) by 14 companies: Brunner Mfg. Co., Carrier Corp., Crosley Radio Corp., Frigidaire Corp., General Electric Co., Gibson Electric Refrigerator Co., Kelvinator Div., Nash-

Kelvinator Corp., Merchant & Evans Co., Norge Div., Borg-Warner Corp., Servel, Inc., Uniflow Mfg. Co., Universal Cooler Corp., Westinghouse Electric & Mfg. Co., and York Ice Machinery Corp.

Domestic		Canadian		Other Foreign		Total World
Quantity	Value	Quantity	Value	Quantity	Value	Value
<b>1. Bottle Water Coolers—Complete</b>						
25,636	\$ 516,944	45	\$ 3,055	696	\$ 51,926	\$ 571,925
<b>2. Pressure Water Coolers—Complete</b>						
1,339	2,509,152	164	14,809	1,139	117,181	2,641,142
<b>3. Water Coolers—Low Side Only</b>						
1,954	137,263	10	584	90	6,342	144,189
<b>4. Ice Cream Cabinets—Complete</b>						
29,723	4,588,354	1,368	159,290	1,944	222,201	33,035
<b>5. Ice Cream Holding Cab. Only (Remote)</b>						
4,587	617,416	39	4,867	174	23,342	4,800
<b>6. Bottled Beverage Coolers—Complete</b>						
36,123	3,201,442	1,382	69,328	1,117	39,680	38,622
<b>7. Milk Cooling Cabinets (No High Sides)</b>						
1,789	120,991	4	278	99	6,485	1,892
<b>8. Air Conditioners—Self-Contained (No High Sides)</b>						
8,663	1,873,527	19	4,285	1,672	390,314	10,354
<b>9. Air Conditioners—Floor Type (No High Sides)</b>						
3,373	1,326,537	13	4,787	276	85,731	3,662
<b>10. Air Conditioners—Ceiling (Cooling Only—No High Sides)</b>						
3,179	538,739	11	2,300	509	67,565	3,699
<b>11. Air Conditioners—Ceiling Type (Equipped for Heating—No High Sides)</b>						
736	397,752	25	9,536	47	24,709	808
<b>12. Air Conditioners—Residential Type (No High Sides, Boilers, or Furnaces)</b>						
450	150,612	3	1,243	101	50,500	554
<b>13. Condensing Units Less Than 1/2 Hp.</b>						
27,333	1,491,349	258	16,302	8,888	526,915	36,679
<b>14. Condensing Units—1/2 Hp.</b>						
46,652	2,136,876	578	46,652	8,403	521,861	34,965
<b>15. Condensing Units—3/4 Hp.</b>						
16,669	1,695,628	432	48,962	3,315	355,356	20,416
<b>16. Condensing Units—1 Hp.</b>						
11,206	1,520,065	237	34,988	1,735	248,947	13,178
<b>17. Condensing Units—1 1/2 Hp.</b>						
8,403	1,315,453	177	32,677	1,177	203,512	9,757
<b>18. Condensing Units—2 Hp.</b>						
4,946	982,770	79	18,073	696	147,076	5,721
<b>19. Condensing Units—3 Hp.</b>						
2,429	566,673	32	8,135	1,530	118,994	3,991
<b>20. Condensing Units—5 Hp.</b>						
2,161	640,591	29	7,598	498	122,791	2,688
<b>21. Condensing Units—5 Hp.</b>						
1,621	661,990	9	3,553	133	55,591	1,763
<b>22. Condensing Units—7 1/2 Hp.</b>						
772	498,797	4	2,372	67	41,088	843
<b>23. Condensing Units—10 Hp.</b>						
849	660,781	5	3,472	77	58,019	931
<b>24. Condensing Units—15 Hp.</b>						
780	706,117	3	2,114	53	45,097	896
<b>25. Condensing Units—20 Hp.</b>						
494	566,429			26	31,010	620
<b>26. Condensing Units—25 Hp.</b>						
350	469,773			7	9,429	357
<b>27. Condensing Units—30 Hp.</b>						
167	255,016			6	8,400	173
<b>28. Condensing Units—40 Hp.</b>						
241	435,580	1	1,600	32	51,200	274
<b>29. Condensing Units—50 Hp.</b>						
68	132,581			2	3,719	70
30. Total—Lines 13 to 29, Incl.	106,673	14,736,439	1,844	226,498	24,645	2,549,005
31. Total—Lines 1, 2, 4, 6, 8, and 30	214,929		4,822		31,213	250,964
<b>32. Commercial Evaporators</b>						
40,404	1,251,620	2,455	81,197	11,236	351,048	54,095
<b>33. Air Conditioning Evaporators (Not Reported Above)</b>						
2,998	786,662	4	274	119	57,695	3,121
34. Total Commercial & Air Conditioning		\$32,753,450		\$582,331		\$4,097,724

## 7,291 Commercial Units Sold In December By Nema Companies

	Domestic		Canadian		Other Foreign		Total World	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
1. Bottle Water Coolers—Complete.....	20*	\$ 2,073*	3	\$ 220	47	\$ 3,190	30	\$ 1,337
2. Pressure Water Coolers—Complete.....	391	42,338	3	257	109	10,876	503	53,471
3. Water Coolers—Low Side Only.....	57	7,006	.....	.....	7	562	64	7,568
4. Ice Cream Cabinets—Complete.....	1,084	142,615	35	3,877	132	13,419	1,251	159,911
5. Ice Cream Holding Cab. Only (Remote)	183	24,099	1	94	8	940	192	25,133
6. Bottled Beverage Coolers—Complete.....	365	37,439	83	3,790	58	4,827	506	46,056
7. Milk Cooling Cabinets (No High Sides)	29	1,914	.....	.....	4	253	33	2,167
8. Air Conditioners—Self-Contained .....	41	5,304	2*	470*	62	14,255	101	19,089
9. Air Conditioners—Floor Type (No High Sides) .....	350	193,497	7	4,025	42	19,568	399	217,090
10. Air Conditioners—Ceiling (Cooling Only—No High Sides).....	112	16,740	4	480	60	7,782	176	25,002
11. Air Conditioners—Ceiling Type (Equipped for Heating—No High Sides)	58	35,375	.....	.....	5	2,714	63	38,089
12. Air Conditioners—Residential Type (No High Sides, Boilers, or Furnaces)	30	9,440	2	1,000	13	6,500	45	16,940
13. Condensing Units Less Than ½ Hp...	667	26,333	9	612	296	17,494	972	44,439
14. Condensing Units—½ Hp.....	1,046	69,340	16	1,333	578	32,690	1,640	103,363
15. Condensing Units—¾ Hp.....	426	41,544	16	1,988	254	28,451	696	71,983
16. Condensing Units—1 ¼ Hp.....	430	60,119	6	915	150	21,470	586	82,504
17. Condensing Units—1 Hp.....	243	37,322	5	997	57	10,028	305	48,347
18. Condensing Units—1½ Hp.....	143	19,035	1	185	37	9,151	187	38,371
19. Condensing Units—2 Hp.....	67	16,755	6	1,662	38	8,854	111	27,275
20. Condensing Units—3 Hp.....	71	21,858	4	1,090	17	4,549	92	27,497
21. Condensing Units—5 Hp.....	35	14,907	1	360	41	17,246	77	32,513
22. Condensing Units—7½ Hp.....	14	9,169	1	560	11	6,952	26	16,681
23. Condensing Units—10 Hp.....	27	21,390	2	1,470	11	8,390	40	31,250
24. Condensing Units—15 Hp.....	21	19,998	2	1,620	1	810	24	22,428
25. Condensing Units—20 Hp.....	24	25,893	.....	.....	1	1,269	25	27,162
26. Condensing Units—25 Hp.....	8	10,354	.....	.....	2	2,851	10	13,205
27. Condensing Units—30 Hp.....	31	43,782	.....	.....	1	1,400	32	45,182
28. Condensing Units—40 Hp.....	51	86,203	1	1,600	3	4,800	55	92,603
29. Condensing Units—50 Hp.....	20	36,532	.....	.....	2	3,719	22	40,251
30. Total—Lines 13 to 29, Incl.....	3,324	570,538	70	14,392	1,506	180,124	4,900	765,054
31. Total—Lines 1, 2, 4, 6, 8, and 30.....	5,185	.....	192	.....	1,914	.....	7,291	.....
32. Commercial Evaporators (Not Reported Above).....	1,538	43,393	111	3,612	1,080	36,519	2,729	83,524
33. Air Conditioning Evaporators (Not Reported Above).....	104	61,871	.....	.....	15	10,683	119	72,554
34. Total Commercial & Air Conditioning	.....	\$1,189,496	.....	\$31,277	.....	\$312,212	.....	\$1,532,985



## Distributor-Dealer Doings

### 'Why Lose Money?' Vining Asks Dealers

INDIANAPOLIS—V. E. "Sam" Vining, of Westinghouse Electric & Mfg. Co., recently addressed members of the Indianapolis Electrical Appliance Dealers Association on "Why Lose Money Selling Electric Appliances?"

Officers of the Indianapolis association are Louis O. Rainer, president; C. H. Domhoff, vice president, and R. S. Kiser, secretary. Committees named are: Attendance—E. M. Lawrence, chairman, J. D. Klinger, Ralph Fisher, John M. Taylor, Donald Delbrook, Glen Shoup, A. C. Crandall, and D. M. Kersey. Reception—Rudolph Crandall, chairman; C. Fred Fitchey, Hugh C. Green, Gerald Hyde, Roy L. Brown, Doyle Wyre, and Adolf Wagner.

### Arkansas Dealers Hear Of Norge Educational Plan

LITTLE ROCK, Ark.—Norge appliance dealers of Arkansas met in Marion hotel here recently for a sales conference sponsored by Gunn Distributing Co., local Norge distributor.

William H. Burruss, special sales consultant for the new educational department of Norge division, Borg-Warner Corp., was principal speaker. Other Norge officials who spoke at the meeting included E. R. Lovegren, educational director; E. I. Jones, southwest district manager; G. B. Turner, of the range division; E. R. Bridge and H. E. Hope, of the washer division.

During the day, the 1938 lines of Norge products and the company's 1938 sales and advertising plans were introduced and explained. W. W. Evans, manager of the Gunn company, was master of ceremonies.

### Miller & Irwin Organize Maryland Dealership

SALISBURY, Md.—Ken Miller and Frank Irwin have organized the firm of Miller & Irwin here to sell refrigerators and appliances and to engage in the electrical wiring business. Westinghouse appliances will be featured.

Mr. Miller, a member of the former firm of Miller & Morgan, will handle the new firm's appliance business; Mr. Irwin, former sales manager of Miller & Morgan, will be in charge of the new company's wiring activities.

### Davis Electric Sponsors F-M Showing

LITTLE ROCK, Ark.—W. B. Davis Electric Supply Co., Arkansas distributor for Fairbanks-Morse Conservator refrigerators, recently sponsored a showing of 1938 models for F-M dealers throughout the state.

### Glennie Elected Officer Of Niagara League

BUFFALO—Robert D. Glennie, district manager of General Electric Supply Corp., has been elected a vice president of Electrical League of the Niagara Frontier to succeed Edward F. Strong. He also replaces Mr. Strong on executive committee.

Other officers of the league were re-elected as follows: Herbert I. Sackett, president; George J. Reichert, vice president; Richard Wahle, secretary-treasurer.

### Cincinnati Distributors Make Preparations For Annual Show

CINCINNATI—Sixth annual Electrical Progress Exposition cosponsored by the Cincinnati Electrical Association and the Cincinnati Times-Star will be held here from March 21 to 26 on the first floor of the Union Central annex.

Participating in the exhibition will be local distributors of nationally advertised electrical household appliances and radios, who are members of the association.

Heading the show committee are E. P. Zachman, chairman, manager of the association, and H. J. Uimer of the Times-Star. Other members of the committee are: Kenneth Magers, Cincinnati Gas & Electric Co.; Matt R. Williams, Crosley Distributing Corp.; John S. Kelley, Jr., Tafel Refrigeration Co., and France Raine, of the Times-Star publicity department.

### Richards & Conover Holds Wichita Meeting

WICHITA, Kan.—The 1938 Kelvinator lines were presented to dealers in the Wichita area at a special meeting arranged by Richards & Conover Hardware Co., distributor, at Hotel Lassen here.

Participating in the conference were S. H. Richards, vice president and general manager of the distributorship; Karl Donovan and Verlus Taff, Wichita branch sales manager and office manager, respectively, of the distributorship, and Henry L. Schmutz, district sales manager for Nash-Kelvinator Corp.

### Norge Program Outlined To Montana Dealers

GREAT FALLS, Mont.—Midland Implement Co., distributor, was host to Norge dealers and salesmen of Montana at a two-day meeting.

Participating in the conference were Carl Rahn, Billings, head of the distributorship; R. L. Rahn, in charge of the Great Falls office; Ronald Reese, Billings; Lee Cox, Norge division sales manager; W. D. Hostetler, Seattle, Norge range division manager; H. W. Winingham, Seattle, Norge heating division manager; T. C. Cawthorne, Norge washing machine division manager, and L. D. Elder, Great Falls, of the Commercial Credit Co.

### South Bend Dealer Buys Lumber Co. Building

SOUTH BEND, Ind.—Radio Equipment Co., Kelvinator distributor here, has purchased the building formerly occupied by Indiana Lumber & Mfg. Co., and will transform it into a warehouse and offices, according to an announcement by J. H. Sunderlin, president.

### Benton-Bailey Is Host To Virginia Dealers

RICHMOND, Va.—Fairbanks-Morse dealers of Richmond and vicinity were guests of The Benton-Bailey Co., distributor, at a dinner meeting held at Rueger's hotel here recently. Thomas Phillips, sales manager of the appliance department of the distributorship, presented the 1938 line of Fairbanks-Morse refrigerators and home laundry equipment.

### New Dealer Sets Out To Sell Kitchens

ST. LOUIS—To sell the American housewife the idea of a completely modern kitchen, and then to sell her all the electrical appliances with which to equip it—this was the goal which Warren H. Kendrick had in mind when he organized Warren H. Kendrick, Inc. as a Norge dealer-ship in Webster Groves, fashionable St. Louis suburb.

To help carry out this plan, Mr. Kendrick had his store equipped with a completely modern, all-electric kitchen for use as a showroom.

### Spurrier's Buys Out W. E. Titus Corp.

OKLAHOMA CITY — Spurrier's, Inc., has purchased the W. E. Titus Radio Corp., maintaining offices here and at Tulsa, and is taking over state distribution of Crosley radios formerly handled by the Titus firm. The new firm is maintaining temporary headquarters at 16-18 W. California Ave. here. The purchase, announced Feb. 6, was made for a reported consideration of \$75,000.

### Gambill Co. To Distribute Landers, Frary & Clark Line

NASHVILLE, Tenn. — Gambill Distributing Co., of which Wheelless Gambill is president and active manager, has been named distributor in this territory for Universal refrigerators, manufactured by Landers, Frary & Clark, New Britain, Conn.

### Oregon Utility Running Appliance Drive In Rural Territory

PORTLAND, Ore.—Portland General Electric Co., first utility in the Pacific Northwest to make a contract with Electric Home and Farm Authority, is conducting an intensive campaign in the lower Willamette Valley for increased use of electrical appliances.

W. H. Hamilton, Willamette division manager of the utility, points out that 85% of the farms in the lower valley are equipped with electricity. Under the contract with EH & FA, customers may make purchases of electrical appliances from their regular dealers on down payments as low as 5% and with long terms.

Monthly instalments on appliances purchased from dealers are payable to the utility at the same time the electric service bills are due; payments are credited to the customer's account and forwarded to the Authority.

### Holmes Heads Refrigeration For Edgar Morris Co.

WASHINGTON, D. C.—Allinson Holmes has been appointed manager of the Westinghouse refrigeration division of Edgar Morris Sales Co. to replace S. N. Smart, who resigned last December to become Westinghouse Electric & Mfg. Co.'s factory representative in this territory.

### Appliance Advertising In Chicago Censured By Business Bureau

CHICAGO—Radio and appliance advertising placed by specialty stores in local newspapers has been condemned by Chicago's Better Business Bureau as more misrepresentative and misleading than advertising for any other type of merchandise.

Some of the abuses listed by the BBB as having been incorporated in these advertisements are: "bait" attractions; improper use of trade marks or names; layouts obviously designed to confuse, if not to deceive, the reader; exaggerated so-called "trade-in allowances" based upon unfounded list prices; and illustrations which picture merchandise more desirable than that described.

"These practices," the bulletin continues, "arouse some competitors to similar tactics, and a 'trade war' is then waged in the public prints. The buying public is confused and exploited. Results are destructive and wasteful."

In a recent bulletin issued by the bureau, examples of this type of advertising are cited and discussed. The bulletin points out that any inaccuracies or objectionable statements in these advertisements have been called to the attention of the advertisers, who have agreed to discontinue such practices.

The bulletin goes on to describe these advertisements as "distinctly harmful to all honest advertisers and potentially destructive to the justified confidence of the public in the accuracy of advertising as a whole."

## THE SAME MOTOR

For Both These Jobs

SELLING APPLIANCES

KEEPING USERS PLEASED



### G-E Motors Help Sell

Millions of these motors are driving refrigerators, washers, ironers, and similar appliances. Their performance has made friends everywhere. Prospects know that they are reliable; a G-E motor on your appliances carries at a glance a conviction of the high quality of their electric equipment. It says *high quality* more loudly than words.

In what better way can you drive home the mechanical and electrical dependability of your appliances than by adding the reputation of G-E motors to that of the appliance manufacturer? With such a combined sales appeal you can spend more time on the advantages of appliance ownership; the merits of your particular product speak for themselves. General Electric Company, Schenectady, New York.

### Why They Are Trouble-free

A domestic electric refrigerator—to mention one appliance—must operate quietly and for long periods of time with little or no attention. Consider a few of the many qualifications G-E motors have for this job:

**Cast-aluminum rotor winding**—a one-piece pressure casting that cannot become open-circuited or burn out. The rotor is one solid piece—has no wearing parts.

**Long-lived bearings**—positive oil circulation constantly keeps fresh, clean oil on bearing surfaces. Bearings have large oil-storage capacity. Oiling is required but once a year.

**Quiet**—rotating parts are carefully balanced to minimize vibration, and the motor is mounted in rubber to isolate all torque pulsations.

The Distributor Who Sells the

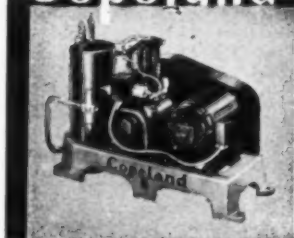
**Copeland REFRIGERATION LINE**

IS BUILDING GOOD-WILL FOR YEARS TO COME!

It is just good business foresight to sell your customers a quality-built Copeland product. Whether you sell Copeland Household or Commercial Refrigeration, you are wisely building up a backlog of long-time customer satisfaction that will pay you dividends in continued patronage for many years.

Write for Sales Plan

COPELAND REFRIGERATION CORPORATION  
Sidney, Ohio



**GENERAL ELECTRIC**

Filing No. 8260

070-220



## Commercial Refrigeration

### Hill '1950' Display Case Has New Coils, Construction, Design, And 'Use' Features

TRENTON, N. J.—Distinguished by a "true" streamlined design, built by a new method of steel construction, and refrigerated with a new coil system, the C. V. Hill & Co. "1950" series of refrigerated display and storage counters is now being introduced to dealers throughout the country.

A number of new convenience features, designed to make the equipment easier for the food merchant to use, have also been incorporated into the new line.

Hill's new "free-flow" coils and baffles are claimed to permit free flow of air over the entire coil surface. There are double U-shaped coils in top, and both top and bottom coils are larger. Ceiling and baffles are of porcelain, and the double drip pan is also of porcelain.

Four inches of Balsam-Wool insulation are used in the new Hill display case line. The insulation is within a hermetically sealed moisture-proof envelope, the corners are completely insulated, and Hill officials point out that there is no non-insulating framework.

To gain streamlining effect, every corner on the counter is rounded and the case gives the appearance generally of having gracefully molded lines; there are no screws or visible fastenings, sub-base is indented, and chrome striping lends a decorative effect.

Cases are of low height, and the display glass has more slant, said to provide a deeper view. Hill "water-white" plate glass is used. A streamlined non-glare reflector is said to eliminate almost entirely light bulb reflection in the front glass.

Principal new feature in the double-duty display cases is a foot-pedal door opener for the bottom

storage doors, making it possible for the clerk to have both arms full and yet open the door conveniently.

Doors have been changed in design, and there are no exposed hinges or catch. Construction details of the door include hard rubber jambs, steel sill, and rubber gaskets. Corners of the door are rounded and it fits nicely against the case to carry out the streamlining motif.

Service doors to the display compartment slide on clogless, roller bearings. The door curves up over the back of the case. When the door slides, part of the case top slides with it, exposing every platter to easy reach.

Extra-long opening handles are also a feature. The doors have insulated centers and a glazing seal.

Several accessory items come with the Hill cases. These include a set of platters for the flat porcelain "slat" shelves; an "up-down" wrapping board; an adjustable scale stand and paper cutter; and parchment paper holder.

Where a completely self-contained refrigerated case is desired, 6, 8, 10, and 12-foot cases are furnished with an attached compressor housing in the form of a counter.

There are four series of display cases in the new line—a single-shelf double-duty display case, a triple-shelf double-duty display case, and two types of top display cases.

The "1950" series Hill dairy display refrigerators are marked by higher display doors, brighter illumination, compact construction (30-inch depth), and the provision of both a display and a storage compartment.

To cool these cases there is a coil, baffle, and flue arrangement in the top of the cabinet. A hinged baffle

affords access to the expansion valve. Self-contained models are available in the dairy box line.

The dairy display cabinets have stepped-back porcelain shelves with ticket molding, porcelain partition to separate the cheese department, double-pane glass, pull-out cheese disk, doors that slide on roller bearings, 4-inch insulation, and galvanized water-tight metal lining.

#### General Controls Moves New York Office

NEW YORK CITY—General Controls Co. has moved its New York City branch office to the floor below its former location at 267 Fifth Ave., where it will have a floor space of 1,000 sq. ft., three times that of its previous quarters, reports W. D. Weeks, branch manager.

Complete stock of controls will be carried at the new location. General Controls is installing control equipment in the Administration building of the New York World's Fair.

#### Philadelphia Branch Is Opened By Penn Switch

PHILADELPHIA—Penn Electric Switch Co. has opened a new branch office here with D. A. Coon, former sales manager of the company's New York City office, in charge, according to an announcement by R. H. Luscombe, sales manager for the company.

All Penn sales and service activities in the Philadelphia territory will be handled from the new branch, and a complete stock of Penn controls for refrigeration, air conditioning, heating, and air compressor applications will be carried.

#### McCartin Heads Chicago Super-Cold Branch

CHICAGO—M. McCartin, former sales manager of Super-Cold Midwest Co., distributor in this territory for Super-Cold Corp., has replaced J. H. Biehn as manager of the distributorship. Mr. O'Meara has been named secretary and auditor.

### Takes Over Eastern Territory For Mills



B. B. Dawes, newly appointed eastern manager of the commercial refrigeration division, Mills Novelty Co., gets a "hand" on the new job from Ray Polley, manager of the division.

### Modern System, Including Evaporative Condensers And Blower Units, Replaces Old Dairy Equipment

UTICA, N. Y.—Three Frick refrigerating machines, including a 9 by 9 with double suction connections and two 7 by 7 units, have been installed in the local plant of General Ice Cream Corp. to replace old equipment.

All of the machines discharge into a bank of three evaporative condensers, mounted over a common water pan. Condenser assembly is located on the roof of the building.

The combined refrigerating plant operates for two Vogt freezers, two batch freezers, a Frick popsicle tank, three hardening rooms, a milk storage room, and an ice cream mixer, total load being 65.55 tons of refrigeration.

#### SUCTION PRESSURES

The 9 by 9 compressor is driven at 360 r.p.m. by a 75-hp. motor. High suction pressure, which is required for cooling the mix and the milk storage room, is maintained by back pressure valves.

Both 7 by 7 machines operate at 300 r.p.m., one with a 35-hp. motor, the other with a 25-hp. motor. The latter compressor is equipped for automatic operation and carries the storage room load overnight.

Combined capacity of the evaporative condensers is 120 tons, based on 72° wet bulb temperature for the air. Maximum recorded head pressure with all compressors running is 165 lbs. Minimum, recorded during summer weather, is 135 lbs. Average head pressure is between 150 and 155 lbs. In winter, the head pressure drops to 100 lbs.

#### WATER REQUIREMENTS

On an average, the condensers require only 0.025 gallons per minute of make-up water per ton of refrigeration. Water feed goes first through a separator-heater, in the discharge line and then through the compressor jackets, before reaching the condenser pan. Make-up water is at an average temperature of 78°.

Hardening room No. 1 has a total of 3,840 feet of 1½-inch VW coils, arranged in two units, in addition to the shelf coils. Hardening room No. 2 is equipped with standard ceiling coils, operating on a recirculating system. Third hardening room has 5,070 feet of 1½-inch VW coils.

Temperatures ranging between minus 12 and minus 17° F. are maintained in the three rooms. Ice cream is passed from one room to another through small doors, and two of the rooms have similar openings for handling of popsicles.

#### BLOWER UNIT

The milk storage room is kept day and night at 35° F. by a Buffalo ceiling-type unit.

Compressor foundations were poured on top of high-density cork placed on a 10-inch concrete slab in the engine room.

Three separate suction lines run to the compressor room, being carried around the walls. These lines facilitate transfer of the load from one machine to another without interrupting the operation of the freezers.

A separate suction line leads from the Vogt continuous freezer, and another from the batch freezer. Fluctuation of pressure on the con-

tinuous freezers when the batch freezer is cut in and out is thus prevented.

In keeping with its general modernization program, the ice cream company also has installed refrigerating equipment in several of its other plants. A 50-ton Frick ice freezing system was installed in the plant at Elmira, N. Y.

#### OTHER INSTALLATIONS

A 36-mold popsicle freezer, with VW coils and control equipment, was installed at Watertown, Mass. Automatic equipment for a unit cooler was installed at Binghamton, N. Y. A 6 by 6 machine, VW coils, and automatic equipment were placed in the plant at South Manchester, N. H. At Bridgeport, Conn., 4,540 feet of 1½-inch pipe and VW coils were installed for a hardening room. A liquid circulating pump was installed at New Haven, Conn., making it possible to lower the hardening room temperature from 0° to -20° F.

### Specially Built System Employed in Winery

MIRA LOMA, Calif.—Heat generated by fermentation during wine-making is controlled in the C. Coppo and Son winery here by year-around cooling apparatus built especially for this industry.

A Carrier compressor, driven by a 15-hp. motor, distributes the cooling compound to a double-pipe, stainless steel wine cooler. This cooler was found to be essential because the varying quantities of water and sugar in the grapes each season led to a problem of temperature control during fermentation.

It was found that, by correct cooling methods, the winery was able to produce the equivalent of a five-year old wine in one year. Another advantage was in the facilitation of wine shipping to eastern markets.

### Refrigerated Truck Carries Ice Cream, Butter & Beer

CHEYENNE, Wyo.—A triple-compartment refrigerated truck used for delivering ice cream, butter, and beer over a 450-mile, two-day route has been put into service by Corbett Ice Cream Co. here.

Two forward compartments are refrigerated to -6° F. by a Frigidaire compressor driven by a specially-wound motor which, through a two-way switch, operates either on 110 or 220-volt alternating current. Six-inch Dry-Zero insulation is used on the sides and ceiling of both compartments, and the floor is insulated with six inches of cork.

These forward compartments are equipped with four Kold-Hold units accommodating 800 gallons of ice cream in cans, packages, and novelty wrappings.

Automatic control shuts off the compressor when a temperature of -6° is reached.

The rear compartment, with capacity for 75 cases of beer and 30 cases of butter, is cooled by controlled leakage from the front sections, and is insulated with three-inch Dry-Zero.



### Build Better Cases with this LIFETIME INSULATION

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### RAILROAD SERVICE PROVES DRY-ZERO DURABILITY

The hardest service demands placed on insulation are found in the refrigerated railroad car. Yet Dry-Zero has been taken from worn out railroad refrigerator cars and used over again. As evidence, the photograph above is of a Dry-Zero sample taken from a railroad refrigerator car 12 years in service. This insulation was inspected by car building experts; declared good as it was when installed in 1926; and put back into use in a new car.

Consider these facts. Then investigate Dry-Zero insulation for use in your own refrigerated display cases! Ask the advice of Dry-Zero Corporation engineers on your insulation needs!

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## Better Instalment Credit Timing Needed To Prevent Its Becoming Drag On Recovery, Merriam Says

NEW YORK CITY—Judgment as to the proper quantity of instalment credit and the timing of its use must be vastly improved, if it is to attain as an objective the stabilizing of production, Malcolm L. Merriam, chief of the Instalment Credit Union, Marketing Research Division, U. S. Department of Commerce, told the Credit Management Division of National Retail Dry Goods Association during the organization's recent annual convention here.

"Instalment credit has no doubt facilitated the growth of mass production industries and contributed to the price reductions which have followed," Mr. Merriam said. "With a constructive attitude, we may ask if there is a way to use this powerful device and avoid disturbing credit effects."

"Perhaps by financing the growing instalment volume from investment funds, rather than bank credit, its diffused stimulus on the up-swing of business can be eliminated, but I see no way, short of intervention by public spending, to counteract its deflationary effects in a period of debt contraction."

"In view of these unsolved problems, even the most moderate statement I can make expresses alarm at the tendency of instalment selling to spread over the whole credit granting retail field."

### CREDIT SALES TOTAL 30%

About 30% of retail sales are credit sales in one form or another, Mr. Merriam stated. Of this amount, roughly two thirds are on open account or regular charge accounts. The other one third is on instalment account, and the amount and character of outstanding credit generated by these sales is quite different from open account credit, he pointed out.

Instalment credit is a longer term proposition, and the consumer is definitely carried into the period of his future earnings in order to liquidate it. From a strictly credit point of view, instalment sales have almost twice the importance of open credit sales, Mr. Merriam declared.

An increase in instalment sales casts a larger and longer credit shadow into the future than a much greater increase in open account sales, he went on.

"The general credit situation may become fairly stable if one group of people are buying on instalment while others are liquidating in equal volume," Mr. Merriam said. "On the other hand, in widespread business recessions purchasing power is absorbed in paying off these consumer debts, and this exaggerates the down-swing."

"Again, if consumers become prematurely overloaded with certain goods, by reason of the facility of buying on instalment, those industries which have over-sold their products in this manner will suffer severely. Liquidations of instalment credit will proceed faster than new contracts are written, and this deflationary factor adds to other evidences of distress spreading from the depressed industries."

### TRACES INSTALMENT GROWTH

"In 1929, instalments outstanding were estimated at about 3 billion dollars. When checked again by the Census of Business in 1935, they were about 2.2 billion dollars, but we had two full years of instalment growth. The shrinkage in the amount of outstanding instalment credit from the peak of 1929 to the low point of mid-1933 may have been as much as 1.5 to 2 billion dollars."

"That was not a small item, and its importance was not diminished by the fact that it represented only a small part of the general deflation of credit."

After reviewing monthly sales and outstanding credit for 40 department stores covering the period 1929 to 1933, and open and instalment credit sales of 172 identical department stores for 1935 and 1936, which indicated that instalment sales are showing a greater relative increase than cash or open credit sales, Mr. Merriam went on to say:

"The volume of department store instalment sales is small, probably less than 10% of all retail instalment sales. Another 25%, approximately,

of total instalment volume is accounted for by more specialized retail outlets dealing in furniture, household appliances, jewelry, clothing, etc. The volume of instalment sales in furniture stores is about equal to department store instalment volume. On the other hand, their open accounts are relatively small."

"The growth of instalment selling by household appliance stores presented outstanding open and instalment receivables by months for 1935 and 1936. In the relatively greater importance of instalment outstandings the credit situation is similar to that of furniture stores, an exception being slower collections on instalment accounts."

### APPLIANCE STORES SURVEY

"For household appliance stores the Retail Credit Survey reports an increase in total sales, of which 74% were on instalment, of 15.2% in 1936. I believe that this figure is too low for all of the appliance business. In comparison with 1935 the average of instalment outstandings for the stores shown was 32.5% greater in 1936. Radio stores are not included in the household appliance group, and their very large retail sales increased about two thirds in 1936."

"From the standpoint of production, the appliance and radio industries have not repeated in 1937 the spectacular increases which occurred in 1936. Reports indicate that the percentage increase in 1937 was about one half that of 1936 over 1935. Retail sales of all electrical merchandise in 1937 are very conservatively estimated at not more than 10% above the 1936 level."

"Of greatest continuing importance, and particularly significant at this time, are automobile sales on the instalment plan. About two thirds of total instalment sales volume is accounted for by the auto industry alone. On an index basis, the dollar value of retail sales of new passenger autos increased from 83.8 in 1935 (1929=100) to 105.1 in 1936 and 114 in 1937."

### ONLY PART OF STORY

"Particularly in the case of major electrical appliances and automobiles, only a part of the credit story is revealed by the retailers' receivables. In both lines there is heavy dependence on sales finance companies, which have ready access to the sources of credit. Figures which have recently been made available show that retail automobile receivables held by a large group of sales finance companies increased from 669 million dollars in January, 1936, to 1,267 million dollars in August, 1937."

"Total instalment sales in 1935 were 3,600 million dollars, advancing to 4,500 million dollars in 1936. Sales of consumers' durable goods, commonly purchased on instalment, experienced a phenomenal acceleration in 1936. A leveling off in some lines became noticeable, however, in the early months of 1937, and virtually all retail sales shared in the decline of the last quarter."

"Available indicators point to a decided easing in the rate of instalment growth in 1937 to perhaps less than half the percentage increase in 1936, which was 25%. On this basis, the instalment volume in 1937 may have been 10% greater than in 1936, or an estimated dollar volume in 1937 close to 4,950 million dollars. Estimated instalment sales would thus be 12.25% of estimated total retail sales of 40,388 million dollars in 1937."

### FEW CHANGES IN 1937

"Average amount of instalment credit outstanding during the year would be determined primarily by down payments and length of terms in relation to the volume of sales. Except for delayed efforts to restrain liberal tendencies, mostly in the latter part of 1937, there is little evidence of any definite effect of terms restrictions for the year as a whole. Consequently, if the instalment collections situation was even as good as in 1936, the estimated 1937 instalment sales volume of 4,950 million dollars would indicate

average instalment credit outstanding of 2,861 million dollars."

"This preliminary estimate is only a fraction smaller than the highest recorded credit level of 2,940 million dollars attained in 1929, and is greater than the 1929 average of about 2,600 million dollars. In 1929, however, there was an estimated 6,500 million dollar volume of instalment sales. Why did only 76% of the 1929 instalment sales volume require a larger amount of credit? Liberal terms and vanishing down payments are the answer."

"The 1937 preliminary estimate of average outstanding credit does not include an unknown quantity of instalment credit extended directly to consumers by banks. Sales so financed are cash sales to the retailer, but the total of what is essentially instalment credit is increased by the transactions. In the not too distant past banks were notoriously opposed to consumer credit in general, and instalment credit in particular."

"Their recent interest in the consumer is not pure altruism. Bank loans and investments, and deposits, are now at the highest level in our history, but the watering down of bank earnings because of idle cash balances and huge new investments in low yield government securities has been a real problem. Consequently, some bankers have cast envious eyes on consumer financing."

### BANKS CHANGE VIEWS

"With reference to retail instalment financing, it would appear that they have reasoned that if retailers and finance companies can borrow from them at favored rates, and profitably relend to consumers, they

might take a short-cut and loan the consumer direct."

"What is instalment credit worth to us at this juncture? Instalment selling is differently valued, depending upon the point of view. Consumers have expressed approval by continuing to buy on instalment plan. Retailers have catered to this demand, broken down the barriers between 'hard' and 'soft' merchandise, devised seductive slogans, and refined credit procedures. Expressing satisfaction with sales volume, they have shifted about two thirds of their instalment credit worries to the sales finance companies."

"Manufacturers are not particularly vocal on the subject of instalment selling, leaving that end of the business to finance companies which are commonly affiliated. It has been the finance company group which has built the strongest and most comprehensive defense of instalment selling. Drawing from experience in boom and depression they construct a case in which great emphasis is placed on their liquidity and flexibility."

### FINANCE COMPANIES LIQUID

"Volume of business of the larger finance companies declined by more than 60% from 1929 to 1932, but in the consequent liquidation their losses were less than 1%. The finance companies responded to consumer demands which accompanied the upturn in 1933, and steadily increased their volume of business up to the last quarter of 1937."

"At the end of the year the larger companies were in position to make collections equaling more than 50% of their automobile receivables and

35% of their household appliance paper within six months. Total retail instalment paper holdings by finance companies were probably from 1.5 to 2 billion dollars."

"Consumer credit is a powerful stimulant and, at whatever point it is injected, it affects the entire economic system. Obviously, if this stimulant is wisely used, it will be administered in the interests of the whole system, and it must be turned on and shut off with the proper timing to preserve general stability."

"Liberal terms and liquidity go together when the outlook is bright, but the movement towards restricted terms in the last half of 1937 was a reflection from the developing general uncertainty of business. In other words, the consumer could be worked to the limit while his income was rising, but the prospect of a decline calls for restrictions in long-term credit."

"An excessive quantity of instalment credit, issued when there was little danger of impaired liquidity, was a primary factor in the recent drying up of automobile volume, the mainstay of instalment financing. Liquidity will take care of the backwash when the volume drops off, but it can also work as a powerful suction pump on purchasing power."

"Finance companies are liquid, and this is a source of satisfaction to themselves and to their banks, but it can be little consolation to those who are dependent on a whole pyramid of industries which may fall to less than the subsistence level. It does not appear that the dominant rule of liquidity in the control of instalment credit is completely satisfactory. Better analysis of future markets is required."

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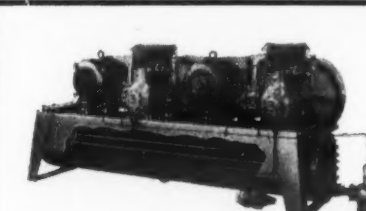
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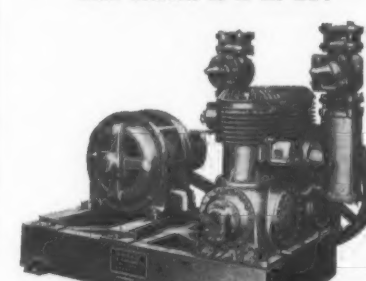
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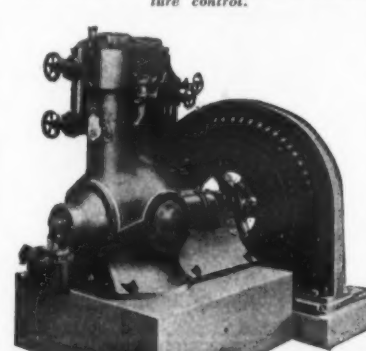
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## Pulse Feeling vs. Dirt Scratching

**C**HICKENS can't read newspapers. Nor do they hear weather forecasts over the radio. Nobody tells them that a general drouth is coming, and that there is likely to be a shortage of worms. They don't read in the newspapers that because of a combination of adverse factors—including the fall of the franc, Japan's probable intent to cultivate cotton in South China, the disappointing wheat crop in Albania, and the unemployment among taxi dancers in New York—less corn may be thrown out to them.

So they keep right on scratching for food.

### Carloadings And Kilowatts

Not so, the business man of today. He sees in the papers that carloadings have fallen off, and that electric power production has dropped a couple of kilowatts. So he cuts down on his next order of goods. Someone tells him that Ed Watkins, over in the next county, is going out of business; and that Walgreen drug stores have noted a serious lessening in the demand for liver pills. So he fires a clerk.

Business is on the bum, he figures, so he stops going after it. He cuts down on his promotion, slows up his efforts, and is apologetic ("you don't want to buy a refrigerator today, do you lady?") about asking for the order.

### Fear-Induced Recession

Pretty soon he and thousands like him have actually produced a depression, or recession, or whatever you want to call it. Happenings a thousand miles away—having little or nothing to do with their own affairs—have frightened them into cutting down expenditures, reducing activities, and crawling into a hole. And when this is multiplied a thousand-

fold in a thousand cities and towns, you have a swing-down in the business cycle.

Time was when depressions didn't come so fast, and weren't so widespread. That was before the days of lightning communication. A depression might come and go before the folks out in Arkansas and Idaho had even heard about it. Not knowing that anything was wrong, they went ahead with business as usual. But today both big and little business is constantly feeling the international pulse, and taking the temperature of remote patients whose maladies these business men couldn't catch if they tried.

### Horses And the Market

Race tracks all over America are booming. Bookmakers and pari-mutuels are taking in more money right now than they have ever seen before. The explanation given by insiders is that hampering regulations have so hamstrung the New York Stock Market that the country's gamblers are now turning to the horses to get a run for their money.

Despite what your preacher may tell you, this development may be not an altogether unmixed evil. When United States Steel drops five points, hundreds of business men all over the land think they see the handwriting on the wall, and pull in their horns. Whereas, if Discovery fails to win by a nose at Hialeah, or Dim Nag leaves the heavily-played favorite in a cloud of dust at Santa Anita, business in Des Moines and Fort Wayne and Syracuse probably won't be affected.

### Gold Is Where You Find It

The point to all this discussion is that gold is where you find it, and that business comes to the man who goes after it. Appliance dealers in Buffalo shouldn't worry about the price of Saskatchewan wheat; nor should a sales manager down in New York prune his nation-wide field force to the bone just because he has lost a wad of dough on the stock market.

True, we live in a world which has achieved a delicately balanced economic mechanism, and its many interrelated factors are to a certain extent mutually dependent. But if every individual business man would follow the policy of "don't holler till you're hurt—and then go out and work harder instead of hollering," the swings of the business pendulum probably wouldn't be so frequent nor so violent.

### Commercial Refrigeration Booms

Take commercial refrigeration, for example. Quietly and unostentatiously, commercial refrigeration is on an upswing just now. How can that be? you ask. Surely merchants aren't spending more money now for new equipment, are they? The answer is no. But commercial refrigeration salesmen are discovering new uses for refrigeration. Whole new fields are being opened up for exploitation; and as a result, several manufacturers are finding it difficult to keep up with orders.

Among the new uses for commercial refrigeration uncovered in the past year or so are the farm locker storage systems (which give promise of growing to tremendous proportions) and "barn" walk-in storage boxes on individual farms; the application of refrigeration to preserve the vitamins in foodstuffs not ordinarily kept

under lowered temperatures; industrial processing, such as wool degreasing and oil separation; low-temperature testing of automobile parts, concrete, and other materials; an extension of cooling uses in bakery operations; movable ice rinks for theaters and night clubs; pre-cooling of fruits and vegetables before transport, and a widespread increase in all kinds of refrigerated transport.

The man who follows the carloadings and the stock market probably isn't getting any of this business. But he could, if he'd spend less time feeling sorry for himself and the probable fate of the world, and more time out looking for new types of customers.

### Observe the Chicken

When you throw corn out to a chicken, it will eat it, and no thanks to you. Not finding the corn, the chicken will scratch around and dig up some worms and grubs. If sales don't walk in the front door any more, perhaps it might be wise to follow the example of the chicken, and go out to dig up some.

## QUOTED

### The Master's Voice

**T**HE Jackson Day address which Mr. Roosevelt broadcast from Washington will bring little assurance or reassurance to business.

While it is true that he reduced the "enemy" to a handful of corporations, what feeling of security can business in general have that in aiming at this minority his bombs will not devastate the whole community? The NRA and the undistributed profits tax caused far more casualties among the little fellows in business than they did among the big fellows, at whom Mr. Roosevelt professes to be aiming.

After nearly five years in office, with the Sherman and Clayton anti-trust acts to work with, we listened Saturday night to Mr. Roosevelt declare war on monopolies, as if they were a new evil, which he is now going to fight to the last ditch.

The clarion call which he issued to the Nation to support his holy war on monopolistic corporations rang hollow and insincere.

And so did his claim to be defending "the integrity of the morals of democracy."

An administration which tore up the gold clause contracts, which violated almost every pledge to the people in the platform upon which it was elected to office, which sneered at the Constitution and tried to subvert it by packing the Supreme Court, which is levying and using an income tax in the guise of old age insurance, which even condones blackmailing corporations and individuals into making campaign contributions through the purchase of worthless books at outrageous prices—an Administration guilty of these and many other departures from ethical practice can hardly expect to be taken seriously, when it talks about upholding the integrity of the morals of democracy or of anything else.—*Detroit Free Press.*

### Business Must Talk

**B**USINESS has been taking a terrible beating at the hands of third and fourth-rate performers in the economic world without fighting back, but it can't continue to be meek and mild in the face of attacks," William A. Thomson, director of the Bureau of Advertising of the American Newspaper Publishers Association, told the Chicago Federated Advertising club here.

"Public ignorance provides a background for the attacks of demagogues, and public ignorance must be overcome through institutional advertising which will tell a constructive, intelligent story for business in terms which can be understood by every waitress, truck driver, and voter in the land, he said.

"Cooperative campaigns may be of some value in the fight," Mr. Thomson said, "but they cannot tell a story for business because business is not a single entity, but a multitude of separate units, each with its own problems and its own stories, and individual effort is therefore essential.

"Ordinary advertising won't do," he said. "Platitudes are out. Business must 'take its hair down' and talk frankly, clearly, and forcefully, using every known advertising medium. It can't use big words or abstract concepts. It must talk facts—fundamental facts that can be understood by everybody, and that no one can misunderstand."—*Advertising Age.*

## LETTERS

### Air Conditioning And Refrigeration Museum

California Refrigerator Co.

1077 Mission St., San Francisco

Feb. 12, 1938

Editor:

As time goes on and the older models of refrigerators are destroyed and the present models of air conditioning will become obsolete, then the industry will wish they had saved the first kinds and makes, but it will be too late. Why not begin at this time to gather up these items and prepare for a museum?

Because your very fine publication is the world center of refrigeration and air conditioning, you should direct the movement and select a committee to start making plans for the preserving of these units and parts.

Even at this time there are many old style parts that are obsolete and have been superseded by more modern equipment, but unless an organized effort is made to save some of these items they will be lost, and future generations will not have the opportunity to study the industry from its very beginning.

We have started already to save many now obsolete items, and no doubt we could fill a large room at the present time if everyone in the industry would save these items.

As your business is growing, no doubt you will have to enlarge your building or secure another, and wouldn't it be an excellent idea for the industry and much satisfaction to you if the museum could be connected with or adjacent to your new building? Please give this matter serious consideration and see just what can be done along these lines.

CLARENCE F. (SANDY) PRATT,  
President

### Harry Williams Is N.C.R. Director Of Research

Western Union  
Dayton, Ohio

Editor:

Noticed title given in NEWS as chief engineer should have been director of research.

HARRY M. WILLIAMS

Editor's Note: The above refers to item in Feb. 2 issue. Harry M. Williams, formerly Director of Standards of Frigidaire Corp. and past president of the American Society of Refrigerating Engineers, is now Director of Research of National Cash Register Co.

### Directory Best Yet, Writes J. D. Colyer

Wolverine Tube Co.  
1411 Central Ave., Detroit

Publisher:

Thank you for sending me a copy of your 1938 Refrigeration and Air Conditioning Directory.

I have just gone through this very carefully, and find it the most comprehensive, completely cross-indexed, informative directory on refrigeration and air conditioning that I have ever seen.

J. D. COLYER,  
Vice President

### English Engineer Views With Alarm

Carrier Weathermakers, Ltd.  
27, Conduit St., London, W.1

Jan. 27, 1938

Editor:

Writing to the editor of AIR CONDITIONING & REFRIGERATION NEWS seems to be becoming one of my hobbies. It just goes to show that your paper is read, even in England, and that we feel that America may possibly find our opinions worthy of their attention.

In your Jan. 12 issue you print a series of questions asked of executives of air-conditioning manufacturers and replies. There seems to be a consensus of opinion that the "packaged" or self-contained unit will show increased sales in 1938 for single rooms in homes and offices and for small businesses. Why not in "series" for many spaces in buildings until the point is reached where a central station is more economically sound?

Taking it for granted that when

you asked these questions about air conditioning you meant air conditioning and not "comfort cooling" or any other of the specific functions of air conditioning without a combination of all of them, I am a little surprised at some of the replies.

If people are allowed to survey spaces and propose and sell and install equipment for those spaces without a proper knowledge of their subject or the ability to make calculations to ensure the equipment providing ideal conditions, or if manufacturers produce equipment for sale which is not capable of giving reasonable satisfaction to the owners—that is to say equipment which has not been satisfactorily engineered—then what can you expect but "comfort coolers that will blow your hair off" as R. G. Hilger says, or "so many of these 'packaged' units have been incorrectly applied, and too many claims made as to their effectiveness, and many of these units are not yet properly designed for the purpose intended," as is stated by E. B. Freeman.

The doctor who prescribes the wrong medicine or repeatedly makes an incorrect diagnosis soon has to pull down his sign. If too many did so, we should soon give up going to doctors at all, until we found a good one.

Again, if the chemist makes up the doctor's good prescription wrongly, first we should—if still alive—change our chemist, and eventually if it occurred too often cease having prescriptions filled and perhaps take to drink as a possible cure for our ills.

"Packaged" true air conditioners for year-around use of the self-contained type, scientifically designed and proven satisfactory for efficient results within the limits of their capacity do exist. If they are incorrectly applied whose fault is it?

As these units often are a means of giving opportunities to "taste" air conditioning which may result in big central station orders, badly designed or badly applied units are a menace to the whole industry.

The "Society of Air Conditioning Manufacturers" could perhaps provide a means of identifying equipment which had complied with their requirements, and propaganda could then be used to inform the public that only equipment bearing their "mark" is officially recognized as properly designed and constructed.

The correct application of such equipment is a more difficult matter. Here again propaganda to the public could make them ask for guarantees of certain reasonable results.

We are so sure that our equipment will do all that is claimed of it that we offer bona fide purchasers three weeks free trial—and they don't come back.

But then our units are really complete air-conditioning units for year-around use, scientifically designed after years of research and testing, and our organization is too proud of the firm's reputation to permit of incorrect applications.

We prefer to pass by an order if we consider we cannot produce the desired results, and we often do so. Our sales staff are capable of doing the job required of them. Not one man would care to bring in an order, his survey for which showed that he had erred in his calculations or the equipment recommended.

That does not mean that there is not a lot of over cooling, under heating, drafty or insufficient air quantity equipment being installed over here. There is; but as the public comes to realize that, dissatisfied with one installation, they may try out real air conditioning at our expense, they do not damn the whole idea.

As you sow—so shall you reap. The time is coming when only those who are good husbandmen will remain in the field.

A. GORDON DEFRIES,  
Director

### Complex Fish Story

O. S. Tyson & Co., Inc.  
Advertising

230 Park Ave., New York City

Editor:

Here is a true story—somewhat off the beaten track but we thought your readers might enjoy it.

O. S. TYSON & CO., INC.

Here's one for the book!

MR. FISH of the American Steel & Wire Co. of Worcester, Mass., recently called MR. PIKE of the Hanson-VanWinkle-Munning Co., Matamoras, N. J., who called MR. HERRING of the Hanson-VanWinkle-Munning Co. of Pittsburgh, who called MR. TROUT of the Bethlehem Steel Co., Johnstown, Pa., in order to make an appointment between MR. FISH and MR. TROUT.

The appointment was made, but who caught what and how big it was, nobody will ever find out.

According to C. W. Yerger, vice president of the Hanson-VanWinkle-Munning Co., our authority for this story, this "affair" did not happen on April 1.



## Springfield, Ohio Dealers Have Good Dec. Sales, Feel 1938 Will Be Equal To 1937

By Alfred Jones

SPRINGFIELD, Ohio—Reporting a general sales increase for December over November, seven local electrical appliance dealers seem to feel that the recession is lifting and believe that 1938 will be at least as good a year as 1937.

That the retail appliance business here felt the effects of the nationwide slump was indicated by Cedric E. Adams, manager of Eden Service Co., dealer for Leonard refrigerators, Bendix home laundry, Easy and Maytag washers, and RCA and Philco radios.

Mr. Adams said that business was going along better than in 1936 until August, when it came to a dead stop.

### PLEASED WITH 1937

On the whole, the dealers were pleased with the total volume of sales in 1937. Average gain over 1936 for the four who could make comparisons was 35%.

Eden Service Co.'s 1937 sales were slightly ahead of 1936, according to Mr. Adams. S. T. Traber, manager of the appliance department of Sears, Roebuck & Co.'s local retail store, said that sales were 15% ahead of 1936, adding that 1936 sales were about 300% greater than those of 1935.

A 20% gain for 1937 was reported by J. A. Neumayer, sales manager of Rudolph Wurlitzer Co. Largest gain of the four dealers was that made by Wren's Appliance Store, whose manager, Mr. Hinton, said 1937 sales were over 100% ahead of 1936.

Trade-ins are quite scarce, according to estimates made by the dealers. Sears had no trade-ins, said Mr.

Traber. Bob's Norge Store had a very small percentage of replacements, as did the Good Housekeeping Shop, Westinghouse dealer.

Eden Service Co. and Wren's each had trade-ins on 5% of their total sales. Wurlitzer's percentage was 4, according to Mr. Neumayer. Less than 10% of the total volume of refrigerators sold during the year by Steinmetz Appliance Co. were trade-ins, according to Sales Manager H. E. Payne. Steinmetz handles Grunow units.

Early introduction of 1938 models proved of no help to Christmas business, the dealers reported. Only four received models early, and but one of the quartet put in a good word for the idea. He was Mr. Hinton, who said that had it not been for the recession and its accompanying lack of public buying spirit, the early introduction undoubtedly would have meant increased sales.

### DECEMBER BUSINESS GOOD

Two of the dealers, Wren's and Sears, enjoyed a two-fold increase in December over November sales. Bob's Norge sales were far ahead of November business, according to the manager.

December sales of Steinmetz were better because of a special promotion campaign, in which a puzzle contest was the central theme.

Mr. Payne reported that the contest resulted in the sale of \$1,500 worth of electrical appliances in three days.

By a clearance on 1937 models, the Good Housekeeping Shop managed to boost its December sales above the mark set in November.

Only two of the seven dealers

added new appliances to their stock during the year. Mr. Adams took on the Bendix home laundry, figuring that because it is a novel product it should sell. He also added Westinghouse ranges, washers, and sweepers because he wanted a new line of appliances to handle.

Wren's Appliance Store added Zenith radios, Mr. Hinton believing it to be a good seller.

Six dealers maintain outside selling, only the Good Housekeeping Shop not incorporating house-to-house canvassing in the outside effort.

### ADVERTISING PLANS VARY

Opinion on the most effective form of advertising or promotion was varied. Mr. Neumayer prefers newspaper advertising. Using the user is favored by Mr. Hinton. Steinmetz' puzzle contest (reported in the Feb. 9 issue) brought in more sales than any other idea used by the store. Newspaper advertising and hard plugging received the vote of the Good Housekeeping Shop.

Mr. Adams said that by means of specials, using handbills, he was able to make 50% of his year's sales in one month. Bob's Norge Store relies on newspaper articles, and Sears, Roebuck specializes in display advertising.

Only the Wurlitzer store has no service department of its own. Of the other six, Wren's Good Housekeeping Shop, Eden Service, Bob's Norge, and Sears service all appliances carried.

About 20% of Wren's sales were combinations, said Mr. Hinton. Combinations represented about 25% of Steinmetz' total sales, according to Mr. Payne. Good Housekeeping Shop

sold a few ironer-washer combinations. Several combinations also were sold by Eden Service Co. Between 5 and 10% of Bob's Norge sales were combinations, and Sears' proportion of combinations was 20%.

Apparently the rural market around Springfield is pretty well taken care of by the Ohio Edison Co. and Sears, Roebuck. As one dealer said, the Edison company puts up the power lines and knows just which farms are ready for electrical appliances. Then, through its own retail store here, it goes out and sells a large percentage of the rural homes.

The built-up popularity of Sears with the farmers has proven a boon to the local retail store, for many of them come in of their accord to buy washing machines and refrigerators.

### RURAL MARKET LARGE

However, the rural market is quite large, and several of the smaller dealers have gone after it and closed a good number of sales.

The general tendency toward stricter credit terms has not produced much of an effect here yet, although there is a strong possibility that when the 1938 selling season gets under way late in the spring, the larger down payments and shorter credit periods might make themselves more noticeable.

Regarding 1938, the general opinion seems to be that on the whole business should be about the same as it was in 1937. Mr. Neumayer predicts that 1938 sales will be greater, and in this prediction he is alone.

The other six dealers merely stated that 1938 should be as good, Mr. Payne going so far as to say that there might be a lift after September.

## Dealer Uses 'Jumbled Words' Contest To Promote Sales

DAYTON — Dilgarde Distributing Co., Fairbanks-Morse dealer here, is holding a series of contests featuring "Crosticks," or jumbled-word puzzles, which are inserted every week in the Dayton Herald and Dayton Journal. In addition to deciphering the wording in these puzzles, contestants must write a paragraph or so telling why they like Fairbanks-Morse refrigeration.

At present, a Fairbanks-Morse radio is being offered as a prize each week, but later the company plans to offer an F-M refrigerator.

Originality in the method of submitting answers plays a large part in the selection of winners. One contestant sent in a cardboard-and-cellophane replica of the store's front.

The most attractive replies are being placed on display in the store's windows, and hundreds more are being shown inside the store. Between 500 and 600 entries are being received each week.

## Advertising of Finance Charge Sought in Proposed Law

BOSTON — Massachusetts shops advertising any merchandise, except jewelry, for sale on the instalment plan would be required to advertise the cost, interest, and carrying charges of such merchandise, under terms of a bill filed in the state legislature by Senator Walter L. Conditine of New Bedford.

### Composite Score Card For Springfield Dealers

- How did the 1937 sales volume compare with that of 1936?  
Three dealers could make no comparison, not having been in business in 1936. Respective gains of the other four reporting dealers were 100%, 20%, 15%, and 5%. Average gain was 35%.
- What percentage of refrigerator sales entailed replacements of mechanical refrigerators?  
One dealer reported no trade-ins. The other six quoted percentages of 2, 4, 5 (two), 8, and 10. Average for all seven was 4.85%.
- Did the early introduction of new models help Christmas sales?  
Three dealers had no early introductions. The other four said they were not helped by the idea, although one recommended it as a good practice in normal years.
- How did December sales compare with those of November?  
All seven reporting dealers said that December sales were better than those of November. Two said December sales were about twice as good. One said they were ahead because of a sale on 1937 stock. Another said they were ahead because of a special promotion.
- What new lines of equipment did refrigerator dealers take on during the year, and why?  
One dealer took on the Bendix home laundry as a novel product, and also Westinghouse ranges, washers, and sweepers to have a new line. Another dealer took on Zenith radios, stating that it is a good seller.
- Do dealers still carry on outside selling? Cold canvassing?  
One dealer does no outside selling. Of the six who do, all but one maintain cold canvassing.
- What form of advertising or promotion did dealers find most effective during the year?  
The newspaper was popular with three, one relying on advertisements, one saying that publicity stories and pictures were most helpful, and the third voting for advertising and hard plugging. Another dealer said that a special sale, in which broadsides were used, drew 50% of his total business in one month. Using the user was most effective for one dealer, while another said display advertising was best. Dealer No. 7 staged a puzzle contest late in the year and found it to be his best sales getter.
- Do dealers maintain their own service departments? For all products carried?  
One dealer has no service department. All but one of the other six service their complete stock.
- Did dealers sell any all-electric kitchens or make any combination sales during 1937?  
No all-electric kitchens were sold. Six dealers made combination sales.
- Did dealers make many sales in the rural market in 1937?  
Two made none. One said that the farmers present a good market which is practically monopolized by the local branches of Ohio Edison Co. and Sears, Roebuck & Co. Another dealer said that the rural market presented a good volume in comparison with the effort expended on it. One dealer's rural sales of refrigerators represented between 10 and 15% of his total for the year. Two dealers said that rural sales amounted to 25% of their totals.
- Have dealers been affected by tightening of finance terms?  
One dealer has his own finance terms. Two have definitely not been affected. One said he has not been particularly affected yet, but might be in the spring. Another dealer said business has been quiet the last few months because of tighter finance terms and labor trouble.
- What is the dealer's outlook for 1938?  
All dealers contacted expressed an opinion that 1938 should be as good as 1937. One dealer, however, has set his budget for a 20% decrease. Only one dealer said that he definitely expects 1938 to be better than 1937.

"Then I Switched to A-P Valves . . . and Trouble STOPPED!"

(A typical remark from a Service Engineer)

"Here's one reason I prefer A-P Valves on all my 'Year's Warranty' installations.

"Superheat Adjustment on other valves is difficult and complicated. But not on the A-P. Just remove the bottom nut and your adjusting stem is right out in front of you."



The "Switch" to A-P Valves is spreading to all phases of Air Conditioning and Refrigeration—Commercial Cabinets, Store Air Conditioning installations of every size and type—Huge Hotel and Industrial Refrigeration and Air-Conditioning.

The Service Engineer working on every job can give you many reasons for A-P Preference—in definite terms of Service-Free and Trouble-Free operation.

A-P Refrigeration Valves are far ahead of their time in design and construction—in super-sensitivity, accuracy of control that invariably mean a Profitable Installation.

**AUTOMATIC PRODUCTS COMPANY**

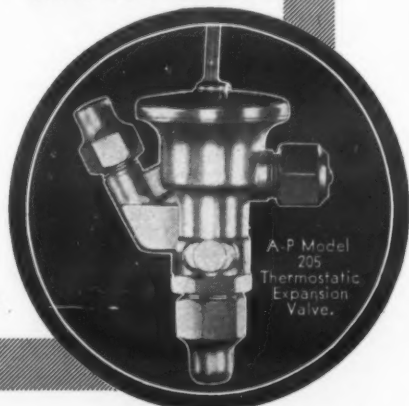
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MILWAUKEE WISCONSIN

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INSTALLATION  
Elm Grove Store  
Elm Grove, Wis.  
CABINET  
Campbell Refrigerator  
Co., Milwaukee, Wis.  
REFRIGERATION UNIT  
York

**VALVES—**

Purchased through Refrigeration  
Specialty Co., Milwaukee Wis.



**DEPENDABLE**

THE BYWORD FOR **CONTROLS**



## Foreign News

### Denmark Is Refrigeration Minded But Import Control Is Discouraging To U. S. Manufacturing Firms

By John Strohm

COPENHAGEN — Refrigeration in Denmark flourishes among a sensible people who know, like, and go after the better things in life. But about all the U. S. contributes towards keeping things cool in this country are the refrigerator controls—seldom do complete American units, compressors, coils, or condensers come to roost in Danish kitchens.

For Denmark has a left hand version of the golden rule: "Don't trade with countries which don't trade with you!" And so the U. S. has been professionally ostracized by one of the tightest import control set-ups exercised by any country in Europe.

The Import Control Board which regulates the flow of trade, is, from necessity, partial to those countries with whom Denmark has a favorable trade balance. And in 1931 there was \$26 worth of goods imported from the U. S. for every dollar's worth of Danish goods which got by the Statue of Liberty. The control board was then set up, and importers required to secure licenses. All firms were to be allowed to import 45% of the value of the goods imported annually prior to 1931.

The board was reorganized in 1934 and the 45% clause was eliminated, since in actual practice firms never came close to getting this quota. The board decided to balance the exchange every three months, and grant import permits as the situation at the time allowed.

The board uses its own judgment. If the articles are actually essential and if the firm was in business before the control board went into effect, the firm will probably be allowed to import "sufficient quantities to just keep going." However, articles made in Denmark, and non-essentials are practically impossible to get by the board.

Importers are asked, "Can you get the article from any other country except the United States?" And "Can you get it from a country with whom we might get an agreement?"

The balance of trade has been reduced from 26 to 1 in favor of the U. S. to 2½ to 1 since the board took over the control. This means Danish imports of American goods have dropped practically that much, since there has been only a slight increase in our imports. General Motors has even rassed up a buyer

of canned milk in Siam in return for the privilege of importing a corresponding amount of goods from the U. S.

This all means tough sledding for those wishing to import American parts and refrigerators. However, several dealers were hopeful of certain improvements in this importing situation. "Something is bound to change in the spring—for the better," declared one.

Most firms get valves, switches, and thermostats from the U. S., and want more. Restrictions which were protection for Danish industries while they got on their feet have proved a boomerang, since the country now finds it difficult to secure raw materials.

#### Milk, Beer, And Meat Industries Are Markets

Milk cows with flowing udders keep the numerous dairies well supplied with milk, and provide one of the biggest outlets for commercial refrigeration in Denmark. Sabroe, the largest Danish firm, controls 80% of this market.

The boys who don't like to milk cows run away to sea. They are real sailors in these parts. These boats are another outlet for refrigeration, also practically monopolized by Sabroe.

Butchers in this stock-raising, meat-eating country are also good customers. And ungrateful and impractical Danes pass up milk for beer which makes beer dispensers ready sellers.

Ice cream as yet has not been endowed with sufficient social status to make it a ready seller among all classes. The Premier ice cream company now has an educational program designed to popularize their

#### Where Better Trade Relations Would Create a Market

Import restrictions are holding back the sale of American refrigeration equipment in Denmark, a country that offers a good market because it is prosperous, and its peoples advanced in their wants and economic desires, says John Strohm, world-touring journalist who has been writing in AIR CONDITIONING & REFRIGERATION NEWS about markets for refrigeration abroad.

Mr. Strohm describes the nature of the market, and tells about the firms that are active in the field in Denmark.

product and to increase sales. (This company handled Kelvinators until import restrictions were placed on U. S. goods.) However, people are slow to take up ice cream as a dessert—there is an abundance of Danish pastries, and the weather is cool.

And yet Denmark has plenty of extra dairy products and nobody to sell them to. She can't sell them abroad because, as she has clamped down on imports, other countries have done likewise. Those countries who will buy these dairy products want to pay for them in manufactured goods, which makes the Danish manufacturers howl. And the Danes won't drink their milk—it would interfere with their beer.

Dairies are good buyers of refrigeration. But many of the shops which sell milk and dairy products use ice, supplied by a huge factory in Copenhagen. These stores had trouble, according to one dealer, in maintaining uniform temperatures when electric refrigeration was first introduced, since it dried out their butter, etc.

#### Apartment Buildings Install Individual Units

The household refrigeration market is growing. Most of the new buildings and apartments have installed cooling units. The American consul was of the opinion that it was only as a selling point for the buildings, and not to fulfill any need.

However, refrigeration firms, whether from business loyalty or not, stick up for the natural progressiveness of the business which they say is supplying a product which the people need and want.

Some of the apartment buildings have a central cooling plant, while others have individual compressors. The price is practically the same.

"The people are educated to want it, but now they must be educated as to price," declared one. The 4-ft. box is the most popular.

Duty charges on refrigeration materials are nominal, only 5 to 7½% ad valorem.

Competition is keen, with many small manufacturers in the field. Price cutting was a charge heard from many. This price cutting, they asserted, meant inferior installations which don't stand up, and which hurt the industry as a whole.

Formerly Danish manufacturers had an export market, but foreign countries have adopted retaliatory measures to Danish control of imports. This foreign market has been squeezed out and has thus made for more competition at home.

Frigidaire and Sabroe both claim to head the household refrigeration sales parade, with Sabroe the undisputed leader in the commercial

field. There are about six Danish manufacturers.

Most firms agreed the U. S. exporters could never compete with the Danish commercial jobs: every job was different, the local firms were on the ground, and jobs were made in too small numbers to be standardized.

However, they also agreed that should restrictions be raised, American household cabinets and standardized equipment would soon dominate the market, since wages in Denmark are too high, and Danish cabinets were made in such small series that they could not get the perfection of American products.

Dealers were of the opinion that restrictions might be raised in the spring, perhaps with the negotiation of a trade agreement. But, as one person said, "It's impossible to buy from the States when we can't sell there."

And Danish factories are now learning to make various items which before 1931 were imported from the States. As each year goes there will be less chance of regaining this market.

Formerly 90% of Danish autos were American—now only 25% of them are—that's how the U. S. goods are losing the Danish market.

Air conditioning will never have a potentially great market due to a short summer, and very low humidity. However, for factories, dairies which make cheese, textile mills, and tobacco shops, it is a necessity and is in use now.

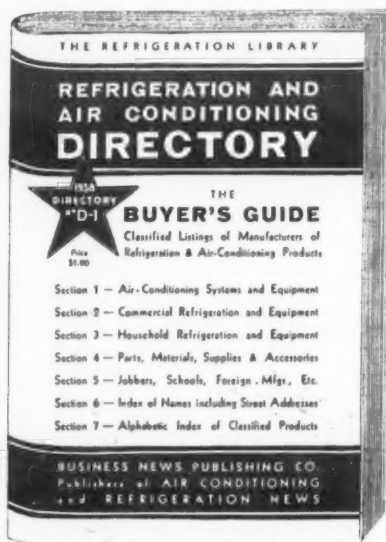
Denmark is a highly prosperous cow and factory country where three and a half million people know how to live. Modern democratic policies, compulsory education, social laws, and 60 year old cooperative societies have raised the country to a high level of civilization.

She is in an excellent financial position, has fertile soil, growing industries, and a people wise enough to stay out of the last war and make money from both sides.

After a year of wandering among the yellows, browns, and blacks in the Near and Far East, the writer reached Copenhagen—a city of 900,000 people, 300,000 bicycles, and thousands of female cyclists crowned with the silky blonde tresses made only by God. It was some time before he remembered what he came for.

There is one car to every 24 people and many, many more bicycles. It looks like a seven day bike race all hours of the day, and during the noon and evening rush, the cycles glut the streets. Tandem bikes are popular—saw one with a hubby behind, a wife in front, and the baby in a basket on the handle bars. (While it scarcely comes under the head of refrigeration, a well-informed dealer told the writer he could learn more about female anatomy in two hours in Copenhagen watching the gals pedal by, than in two years at college.)

To get some idea of just how long the summer was in Denmark, I asked the question of a not-so-boasting Dane. He answered, "I can't remember but I think summer was on a Friday this year." (The writer thanked Allah he got there on a Friday—winter clothing mailed from Hongkong, China, never arrived in Berlin, so he investigated refrigeration in Denmark and Norway in a (Concluded on Page 15, Column 1)



## You need this book!

### A completely new Refrigeration and Air Conditioning Directory at a new low price:

**\$1.00  
per  
copy**

**Contents of  
1938 Directory**

The new 1938 Directory (No. D-1) is designed especially for the buyer of refrigeration and air-conditioning products. The data is arranged in seven sections:

- (1) Manufacturers of air-conditioning systems and equipment;
- (2) Manufacturers of commercial refrigeration and equipment;
- (3) Manufacturers of household refrigeration and equipment;
- (4) Manufacturers of parts, materials, supplies, and accessories;
- (5) Jobbers, schools, and foreign manufacturers;
- (6) Index of manufacturers' names, including street addresses; and
- (7) Alphabetic cross index of classified products.

Business News Publishing Co.  
5229 Cass Ave., Detroit, Mich.

Enclosed is \$1.00. Send the 1938 Refrigeration & Air Conditioning Directory No. D-1, listing manufacturers by products.

Name .....

Street .....

City ..... State .....

Note: Add 50 cents to the total amount of your order for BOOKS if shipment is to be made outside of the United States.

**A CASTLE  
of Comfort  
in DETROIT**

**BARLUM  
HOTEL**

CADILLAC SQUARE  
AND BATES STREET

**810  
OUTSIDE  
ROOMS**

**\$2.50  
DAILY**

FROM 12:00 PM  
ALL WITH  
BATH

**SAVE 20-40%**

Write for details of  
Alco's new Small  
Capacity "TK"  
Thermo Valve

Alco Valve Co., Inc. - St. Louis, Mo.

**For Information on Motors  
FOR ALL TYPES OF  
Air Conditioning and  
Refrigeration Equipment**

WRITE TO

**Wagner Electric Corporation**



## Local Manufacturers Offer Plenty Of Competition For Danish Market

(Concluded from Page 14, Column 5) white suit. The dealers probably thought it was a refrigeration promotion stunt to make the people think it was hot, whether or not, and that they needed refrigeration, air conditioning, etc.)

For being so far north, the Kingdom of Denmark has a mild climate, with a mean temperature of 45 degrees, and annual rainfall of 27 inches. Agriculture, principally dairying and stock-raising, supports 30% of the population; handicraft and industry, 27%; commerce and finance, 8%; and transportation, 7%.

Leading imports are grain and grain products, cotton, flax, wool and silk, and manufactures of these; foodstuffs; automobiles; machinery; instruments; various plant stuffs; coal and coke; tallow, oil, rubber; iron and iron products; groceries; chemical-technical articles, including fertilizer.

Leading exports are dairy products; bacon, beef, and slaughterhouse products; ships, automobiles, machinery, instruments; live-stock; eggs; tallow, oil, skins, hair, feathers, bone.

Chief cities are Copenhagen; Aarhus, 96,000; Odense, 77,000; Aalborg, 55,000; Randers, 34,000; and Esbjerg, 32,000. Special licenses are required covering shipments of foreign goods to be imported into Denmark; licenses are issued by the Foreign Exchange Control Office.

### Foreign Salesmen Must Have License

Denmark has a king guarded by fur-capped dragoons and a Parliament elected by the people. Old age pensions, unemployment insurance and other social legislation have been in effect for years. Excellent facilities of transshipment and storage of goods destined for Baltic ports are offered by the Copenhagen Free Port.

Representatives of American firms desiring to solicit orders or to sell goods in Denmark must have a foreign salesman's license. Applications for such licenses must be accompanied by a letter of introduction from the firm represented, and a statement from suitable American authorities to the effect that the firm is entitled to do business according to American law. These licenses are issued by the customs authorities and cost Kr. 300 for a year. (One dollar—3.73 krone.)

### Frigidaire Division General Motors International Copenhagen

"Ten years ago we couldn't sell commercial refrigeration, but we finally impressed business men with their need. Now they have again slipped back. So we are doing promotional work, and urging the purchase of refrigeration as a good investment during prosperous times," according to A. G. Blom, manager of Frigidaire division of General Motors International.

The educational campaign follows this line of reasoning. "See what the government and other officials are doing to protect your food—why should you spoil it by improper attention?"

"Maybe we're idealistic in spreading the ideas, but we are relying on our sales force to get the business." Frigidaire, which is one of the biggest if not the biggest seller of domestic refrigerators, is undersold as much as 35%.

"We sell quality," is their answer to this seeming paradox. The company is the only U. S. importer which gets considerable goods from the States. However, they have adjusted their sales to meet the exist-

ing conditions. They go to their General Motors factories in Germany and England, with whom Denmark has commercial treaties, for those things which they can't get in the States.

They take their U. S. quota in switches, valves, thermostats, and bodies, and make their own coils, frames, and condensers. Import restrictions hurt because they cannot bring in big compressors from the States, for they would take up all the quota and leave nothing for their controls. If restrictions are in force for any length of time, Frigidaire will probably develop needed items in a country which has a trade agreement with Denmark.

Dealers don't want a five-year guarantee here, because the customers haven't asked for it. The present service policies are also very liberal.

### Thomas Sabroe & Co. Aarhus, Denmark

The biggest refrigeration firm in Denmark is Sabroe, which celebrated forty years of progress this year and has sold upward of 12,000 compressors over the entire globe.

"SABROE SECOND TO NONE," is the slogan followed since 1897 when a comparative test was made between machines of different makes and with different cooling mediums (CO<sub>2</sub>-NH<sub>3</sub>-SO<sub>2</sub>). After trials in creameries and breweries, the Sabroe carbon dioxide method proved superior, and the slogan came into being.

This firm leads in the sale of commercial refrigeration to dairies, butchers, and ships. Of the more than 5,000 compressors which they have sold in this country, 1,339 installations were made in dairies; 184 in butcher shops; and the rest in margarine factories, hospitals, ice and ice cream plants; restaurants and breweries. They have equipped more than 500 ships with cold rooms, and freezing compartments for provisions and cargoes, including the royal Danish yacht, the Japanese navy, and the Vanderbilt yacht.

Sweden, France, Norway, and Spain are her best European customers, although 84 compressors have been delivered in Iceland. They have Sabroe equipment in all countries, and have made 108 installations in the U. S.

Sabroe has just brought out a new three-temperature direct expansion ammonia refrigerating plant. While designed primarily for ships which carry fruit and frozen produce and need different temperatures, this is also adaptable to land industries.

For instance: ice cream factories where cream is frozen at -10 to -30 degrees Centigrade; hardened at -20 to -25; and rapid frozen at -45 to -50. In fish freezing plants the system can also be used for making ice at -10 to -12 Centigrade; freezing of fish at -30 to -40; and storage of frozen fish at -15 to -20.

Sabroe sold their first air-conditioning equipment in 1913 and are now laying the groundwork in a

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Air Refrigerants Industrial Gases  
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**W. A. HAMMOND, YELLOW SPRINGS, OHIO**

talking campaign for the market which is to come, according to Sabroe officials. They have had a man in the States studying problems for some time to be ready, and they expect to take over the volume of the business.

They have made several installations in factories, cheese, tobacco, and yeast plants, and expect this outlet to grow.

Since 1897 Sabroe sales have been steadily going up. It took 10 years to sell the first 500 compressors. But they made more than a thousand installations in 1936, and expect to make more in 1937.

### A. Jorgenson & Co. Jagtvej 157 Copenhagen, Denmark

The manager of A. Jorgenson & Co. said, "I can't understand how they make things so cheaply in America." And he asked a question which would give Big Business a chance to chuckle plenty, if a bit bitterly.

"Do businesses get help from the government in the form of subsidies? How then can they put out such marvelous products when wages and raw materials are as high as they are here in Denmark?"

Mr. Hertz sees a big future market for household units, sales of which are now increasing rapidly. However, he says, sales of ice refrigerators are also increasing, since they sell largely to shops handling dairy products.

"Sales of commercial jobs of 500 to 5,000 calorie capacities are decreasing because butchers and others bought five, 10, or even 15 years ago.

But the market may come again," he declared.

Speaking of trade restrictions he said, "There must be a change; there is talk of one coming in the spring, and we feel it will lighten restrictions considerably."

He believes individual ice cream freezing units will soon be frozen out, because they can't compete in quality or price with the cream made in a central factory. "It's the poorer class who owns them and it's one hell of a job collecting from them. They sell ice cream only about six months, and their cabinets lie idle the rest of the year."

The firm also manufactures vacuum coffee grinders, the latest thing out. They formerly had a big export business both in coffee grinders and refrigeration until Danish restrictions on other countries got these countries in restricting moods also. They particularly like American electric motors for their grinders, but can't get them. The Danish motors are of high quality, but they believe the American ones are better.

### Helweg Jorgenson Vodrofsvej, 56 Copenhagen, Denmark

Although business is good, there are too many competitors who cut prices and put out cheap goods which hurt the business, according to Helweg Jorgenson. And the same holds true in technical lines also, he says.

He finds it nearly impossible to get U. S. goods, although he does get his controls and a 1/4-hp. compressor from the States. He believes it would be difficult for Danish manufacturers to compete with American

products were there no restrictions. While household sales are increasing, the prices are much too high in his opinion. One thousand krone for a 3 1/2-foot box—and he says a dollar is worth two krone in actual purchasing power.

## Refrigerators Are Best Selling Appliances In Syria

BEIRUT, Syria—Electric refrigerators are the best selling electrical appliances in Syria, according to U. S. Vice Consul Easton T. Kelsey. Radios and electric fans are practically the only other types of electrical appliances used in the country, Mr. Kelsey says, the latter being used in business offices and government offices during the summer months.

Import figures for the past three years show that the total number of refrigerators entering Syria increased from 148 in 1934 to 628 in 1935, but dropped off in 1936 to 495. The following table presents a concise picture of the refrigerator imports for these years:

Country of Origin	Units Imported		
	1934	1935	1936
United States .....	68	322	474
Palestine .....	39	96	7
Czechoslovakia .....	..	96	1
Sweden .....	1	55	..
France .....	5	39	9
Other countries .....	36	20	4
<b>Total .....</b>	<b>148</b>	<b>628</b>	<b>495</b>

These figures include ice cream cabinets, cold storage equipment for butchers and grocers, and other commercial refrigerating units as well as household boxes.

## LIGHTWEIGHT, RESILIENT ARMSTRONG-CORNING WOOL *Speeds Assembly, Aids Efficiency*

NOW you can increase cabinet efficiency and reduce assembly costs with a modern-type insulating material. Armstrong-Corning Wool Insulation is easily handled because of its light weight and the convenient units in which it is available. And this new insulation helps build better cabinets because it is efficient, lasting, and resilient.

Armstrong-Corning Wool is composed entirely of inorganic, chemically inert fibres. The long springy fibres of this insulation have a resilience that is permanent. This lasting resilience adds long service life to cabinets because it helps to keep the insulation in place. Instead of settling due to vibration this material tends to expand. And Armstrong-Corning Wool has high moisture-resistance, which helps it to keep its efficiency through years of service.

To makers of refrigerator cabinets, Armstrong offers a complete line of efficient insulating materials. In addition to Armstrong-Corning Wool, you can choose either Armstrong's Temlok or Armstrong's LK Corkboard. Temlok is a rigid fibreboard, economical of space, strong, and efficient. LK Corkboard is a lightweight corkboard insulation made especially to withstand low temperatures in severe service.

### Armstrong's Life Test Room

Let Armstrong help you test the efficiency of the cabinets you build. In the Armstrong Life Test Room, under accelerated conditions of temperature and humidity, cabinets are given tests which, in a few weeks, approximate years of hard service. There is no obligation—Armstrong bears all the expense of testing. Write for details to Armstrong Cork Products Co., Building Materials Division, 1002 Concord St., Lancaster, Pennsylvania.



AVAILABLE in plain, fold, wrapped, or veneered bats and in sealed package cartons—Armstrong-Corning Wool is easily handled, quickly installed. Workman is holding veneer fold bat.

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ARMSTRONG-CORNING WOOL • ARMSTRONG'S TEMLOK • LK CORKBOARD



# Air Conditioning

## Installation For Operating Rooms Of A Hospital Must Meet Needs Of Surgeon & Patient

By Henry Knowlton, Jr.

DETROIT—Accurate control of temperature and humidity in four separate rooms, covering a wide range of atmospheric conditions, was the problem before Eric F. Hyde, registered mechanical engineer, in designing an air-conditioning system in Women's Hospital here.

"The application of air conditioning to hospital operating rooms is primarily a problem of obtaining comfort for the surgeon and his staff, yet it must be flexible enough to fit the requirements of the patient," Mr. Hyde pointed out. "In the operating room a control system is necessary to permit the surgeon to vary atmospheric conditions to meet his own needs, or those of his patient."

"Because of the fact that all anaesthetics are vasodilators, particularly in the case of ether, the patient loses ability to regulate his own body temperature. Although the patient is usually kept at 91° F. by means of blankets and applied heat, cases occur where this method is

impracticable, and the surgeon must depend on operating room temperature."

The problem of air conditioning in hospital operating rooms, as outlined by Mr. Hyde, is that of giving the doctors the kind of air they want at the time they want it. Careful investigation of the problem, however, brought forth the following basic requirements:

1. Clouding of glasses during an operation hinders the surgeon in his work, and as his hands are never free to wipe them off, this must be done by an assistant. Atmospheric conditions in an operating room should eliminate the possibility of fogging spectacles.

2. Perspiration must be eliminated where possible, because tiny drops of perspiration containing bacteria may fall into an open wound.

3. Formation of static electricity must be prevented, as a static spark may cause an explosion of anaesthetic gases. It is essential that a high

absolute humidity be maintained, irrespective of the relative humidity conditions.

4. Operating rooms must be aseptic, so it is important that a positive supply of clean, filtered air, free from dust, dirt, and bacteria, be introduced into the room.

5. Drafts must be eliminated.

6. Because of the fact that anaesthetics form layers of gas close to the operating room floor, odor concentration in the room must be dissipated by air movement.

7. 100% outside air is necessary at all times, as re-circulated air would be laden with anaesthetic gases.

8. No equipment such as fans, motors, wiring, controls, or other devices that produce an electric spark shall be installed in the room.

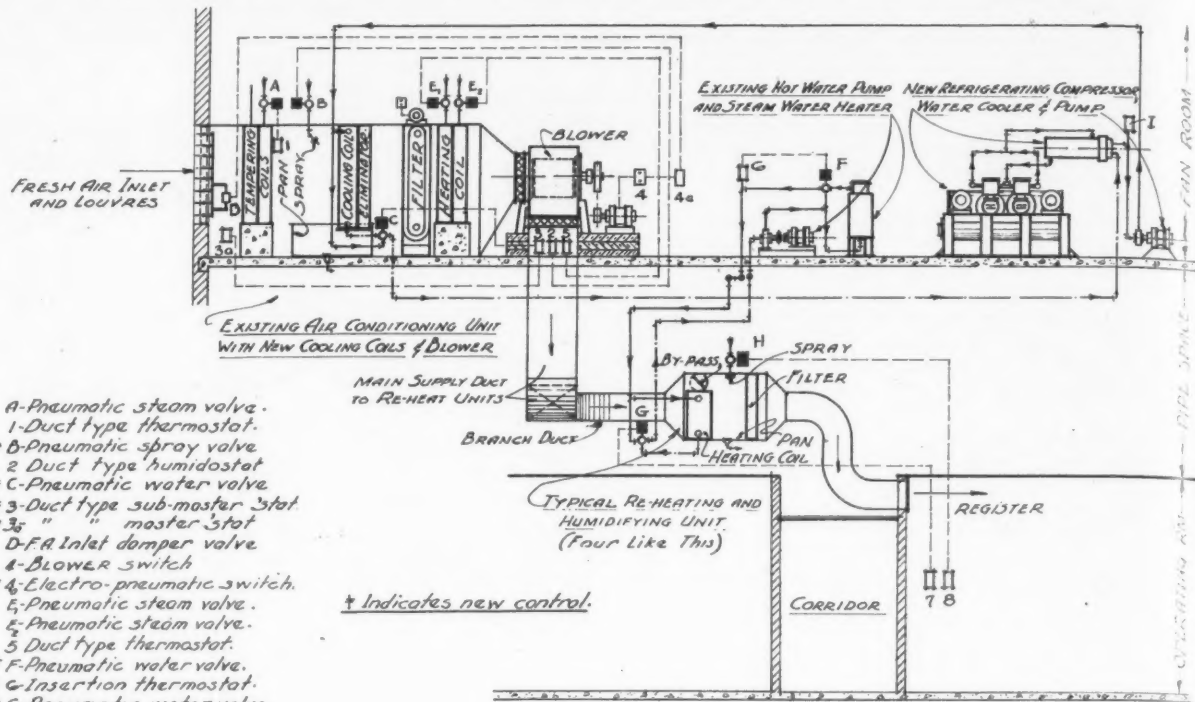
9. Winter conditioning shall have positive control of temperature and humidity irrespective of outside air conditions.

10. Summer air conditioning shall have positive control of temperature and humidity, but the design dry bulb need not be so low as in many types of air-conditioning installations.

### CONTROLLED SEPARATELY

To meet the above requirements Mr. Hyde designed an air-conditioning system for the operating rooms at Women's Hospital which permits accurate and automatic control of each operating room, both as to temperature and relative humidity conditions. These conditions may be varied according to the desires of the operating surgeon by setting the

## Installation For Exact Conditions Demanded By a Hospital



SCHEMATIC SKETCH SHOWING ELEVATION OF EQUIPMENT

This drawing of the air-conditioning system for Women's Hospital of Detroit shows the elaborate control system necessary to maintain desired conditions in four operating rooms. Separate re-heating and humidifying units were used, each having individual controls. The layout was prepared by the Eric F. Hyde organization.

thermostat and humidistat in the room.

Any combination of temperature and humidity is possible from approximately 60° F. and 65% R.H. to 100° F. and 100% R.H. Temperatures can be controlled within one degree above or below any setting and relative humidities within 3% of any setting.

### PNEUMATIC TYPE

Working to such close limits of temperature and humidity is a matter of control, Mr. Hyde indicated. Controls were installed by the National Regulator Co., and are of the pneumatic type, which fulfills the requirements of the surgeons that no electric sparking device be installed in the operating rooms.

The air-handling system itself consists of a central air-conditioning unit, located in the machine room on the sixth floor; four reheating and humidifying units, each serving its respective operating room, are located in the attic space above the fifth floor. Supply ducts located in the same space connect the reheating units with grilles in the various rooms.

A motor-driven exhaust fan and system of sheet metal ducts draws air from the various rooms, and discharges it to the outside.

The central air-conditioning unit consists of an American Blower multiblade centrifugal fan having a capacity of 4,500 c.f.m. driven by a 1½-hp. motor; two sections of Vento steam tempering and heating coils; Aerofin cooling coils; Midwest self-cleansing oil filters, and humidifying sprays.

Each of the four separate reheating and humidifying units, one for each operating room, consists of an Aerofin hot water reheating coil; a Somers hair glass filter, and a humidifying spray. The filter serves as an eliminator of entrained moisture.

During the winter season the air is first tempered to 50° F. by the tempering coils; humidified to approximately 90% R.H. by the humidifying sprays; filtered by the oil filters; reheated to 70° and 60% R.H. by the heating coils; and delivered by the blower through ducts to the four reheating and humidifying units.

Air in passing through these units is reheated and humidified to the temperature and relative humidity desired by the operating surgeon.

### COOLING SYSTEM

In the summer season the air is first cooled to approximately 55° F. and 100% R.H. by the cooling coils; and delivered to the four reheating and humidifying units where it is raised to the temperature desired.

Temperature and humidity are automatically controlled through each step of the air-conditioning process. In the winter season the temperature of the air leaving the tempering coils is controlled by a duct-type thermostat located in the spray chamber. One bank of tempering coils is hand controlled.

### THERMOSTATS

A second duct thermostat and a humidistat located in the blower discharge control the heating coils. A room thermostat operated its respective bypass valve to control the temperature of air from the reheat units. Each humidistat operates its respective water valve to control the humidifying spray in the reheat units.

Steam for the tempering and heating coils of the central conditioner units is supplied from the low pressure mains in the building. This is available only during the winter season.

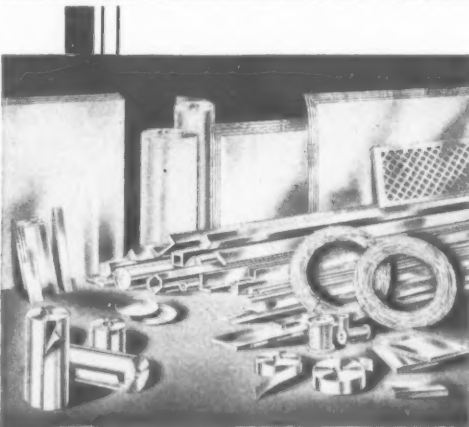
Hot water for the hot water heating coils of the reheat units is pumped by a motor-driven centrifugal pump through a steam water heater and through supply and recirculating mains in a closed circuit.

The temperature of the water at the discharge of the heater is automatic. (Concluded on Page 17, Column 1)

# BUNDY TUBING

... Proven Resistance to Bursting Pressure

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## HUSSEY COPPER

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# HUSSEY

## BRUNNER

Send for the New REFRIGERATION CATALOG

Seven Models of Compressors  
Fifty-eight Models of High-sides from ¼ H.P. to 15 H.P.  
BRUNNER MANUFACTURING CO.  
UTICA, N. Y.



## Air Conditioning Aid To Patient's Chances, Declare Surgeons

(Concluded from Page 16, Column 5)

matically controlled by an immersion type thermostat.

Cold water for the cooling coils of the central air-conditioning unit is provided by a Carrier shell and tube cooler, and a Carrier condensing unit, which were installed by Atmospheric Control Corp., Carrier distributor.

The cooler is a Carrier type 10-K having 88 sections of 1/2-inch O. D. Aerofoil tubing, with eight fins to the inch. The cooler has a storage capacity of 300 lbs. of Freon, and a water capacity of 53 g.p.m. cooled from 50° to 40° F. The cooler is 9 feet long by 12 inches in diameter and contains 486 sq. ft. of cooling surface, including the fins. It has a maximum capacity of 30 tons.

The condensing unit is a Carrier Corp. Model 7-F-66 consisting of two interconnected four-cylinder Freon compressors, each driven by a 15-hp. motor.

As either compressor will shut off on a reduction of suction pressure, independent of the chilled water temperature, the unit is extremely sensitive to load conditions encountered by the system. The compressor operates at a suction temperature of 33° F.

Another modernization of an existing heating and ventilating system was made in Harper hospital, Detroit, by Frigidaire Corp., which has installed 20 tons of air-cooling capacity to serve a series of six operating rooms.

According to Dr. Stewart Hamilton, director of Harper hospital, the summer air-conditioning system "reduces the mortality and morbidity of a patient during long operations in hot weather, and assists in the prevention of dehydration of the patient following an operation."

"We have also found that the way a patient takes anaesthetics varies with changes in temperature, humidity, and barometric pressure. The use of an air-conditioning system tends to relax the patient, causing him to take an anaesthetic better."

Fresh air is heated and filtered in a central conditioning unit powered by a 6,000 c.f.m. American Blower fan. The tempered air is introduced to the branch ducts feeding each operating room through a central supply duct.

Each individual branch duct has been widened out to accommodate direct expansion cooling coils installed near the cold air outlet; each coil controlled by its own thermostat and solenoid valve. This control system serves to meet individual conditions encountered in the various operating rooms.

Air from the branch ducts is introduced to the operating rooms between the panes of large double windows on the outside of the building. Cold air is diffused by the natural curving contour of the ceiling at the top of these windows.

Humidity control is provided by a spray system in the central conditioner actuated by a humidistat.

Two 10-hp. Frigidaire Freon compressors are located on the floor above the operating rooms served. The units are controlled by reduction in suction pressure on the direct expansion lines.

**The PREFERRED Refrigerant for service work**

**Artic**  
(DU PONT METHYL CHLORIDE)

MACHINE MAKERS like ARTIC because its favorable combination of properties permits building compact, light-weight units that operate efficiently and economically.

Service Men like ARTIC because its high purity, wide distribution and ease of handling contribute to convenient, dependable work in recharging Methyl units.

**DU PONT**

E. I. Du Pont de Nemours & Co., Inc.  
THE R. & H. CHEMICALS DEPT.,  
Wilmington, Del.

## N. Y. & Pennsylvania Lead States In 1937 Sales

\*Note: This summary includes adjustment figures reported by several companies which do not represent their actual December sales but are corrections to be applied to their first 11 months' totals to give their correct total apportionment among the various states for 12 months.

States and Territories	Quantity Household Low Sides
Alabama	24,047
Arizona	7,628
Arkansas	11,903
California	142,871
Colorado	14,239
Connecticut	41,482
Delaware	4,991
District of Columbia	18,744
Florida	29,616
Georgia	35,741
Idaho	8,949
Illinois	171,464
Indiana	61,766
Iowa	32,712
Kansas	23,410
Kentucky	28,883
Louisiana	21,606
Maine	8,486
Maryland	27,744
Massachusetts	92,441
Michigan	116,763
Minnesota	40,025
Mississippi	10,794
Missouri	60,422
Montana	8,198
Nebraska	16,410
Nevada	2,606
New Hampshire	6,557
New Jersey	90,242
New Mexico	4,441
New York	263,887
North Carolina	44,298
North Dakota	4,048
Ohio	159,007
Oklahoma	21,504
Oregon	16,671
Pennsylvania	210,397
Rhode Island	12,351
South Carolina	20,971
South Dakota	4,588
Tennessee	33,762
Texas	87,649
Utah	11,595
Vermont	5,680
Virginia	33,963
Washington	31,004
West Virginia	25,534
Wisconsin	48,280
Wyoming	2,965
<b>Total United States</b>	<b>2,203,335</b>
Canada	35,243
Other Foreign (Including U. S. Possessions)	156,081
<b>Total For World</b>	<b>2,394,659</b>

## New York, California, Illinois, New Jersey Lead December Sales

States and Territories	Quantity Household Low Sides
Alabama	987
Arizona	308
Arkansas	374
California	8,231
Colorado	862
Connecticut	3,745
Delaware	490
District of Columbia	1,400
Florida	2,117
Georgia	1,161
Idaho	297
Illinois	7,755
Indiana	3,483
Iowa	1,614
Kansas	915
Kentucky	1,438
Louisiana	405
Maine	238
Maryland	1,756
Massachusetts	6,046
Michigan	3,336
Minnesota	1,286
Mississippi	414
Missouri	1,312
Montana	244
Nebraska	1,157
Nevada	111
New Hampshire	490
New Jersey	6,050
New Mexico	123
New York	14,498
North Carolina	1,932
North Dakota	215
Ohio	6,367
Oklahoma	694
Oregon	724
Pennsylvania	6,907
Rhode Island	577
South Carolina	392
South Dakota	287
Tennessee	1,228
Texas	4,781
Utah	597
Vermont	356
Virginia	1,532
Washington	965
West Virginia	1,360
Wisconsin	2,586
Wyoming	160
<b>Total United States</b>	<b>101,881</b>
Canada	1,923
Other Foreign (Including U. S. Possessions)	9,328
<b>Total For World</b>	<b>113,132</b>

## Westinghouse Plans Field Schools On Commercial

(Concluded from Page 1, Column 5)

charge. It is expected that 1,000 service engineers, application, installation, and sales representatives will be represented at the various territorial meetings.

"Past experience has taught us that most of the 'grief' we have with our equipment in the field is due, not to the principle or theory of design of the equipment, but rather to a lack of understanding as to proper methods of procedure in estimating the application or the direct installation of the equipment," explains T. J. Newcomb, Westinghouse commercial refrigeration sales manager.

"We feel that members of the headquarters staff, coordinating both the principles of theory and practice with the various agencies in the field responsible for the sale, installation, and service of our equipment, can be of immeasurable assistance."

Subjects to be covered in the schools include such topics as "Preparations for Making Installations," "Examination of Fixtures and Coils," "Installation of Oil Separators," "Dehydration of New Coils and Tubing," "High Pressure Air Tests," "Testing for Failure of Unit Mechanism," and kindred problems.

B. C. Davison and G. C. License will be headquarters representatives for the western schools, while William Robertson and Stephen Volcker will have charge of eastern meetings.

## Operating Cost Data Shown By Frigidaire

DETROIT—Daily current consumption averages ranging from .55 kwh., for the 4-cu. ft. model, to 1.05 kwh., for the 8-cu. ft. model have been established for Frigidaire refrigerators as a result of tests supervised by factory engineers, more than 1,000 dealers and salesmen from the Michigan territory were told at Frigidaire's sales convention in the Masonic Temple here Monday.

The tests were conducted on stock models in regular use in the homes of Frigidaire owners in Boston, Dayton, and Fort Worth, since these three cities are typical of the climatic belts into which the United States is divided, dealers and salesmen were informed.

Daily current consumption averages for other size models were determined as follows: 5-cu. ft. model, .58 kwh.; 6-cu. ft. model, .65 kwh.; 7-cu. ft. model, .8 kwh.

In addition to refrigerators, several models from Frigidaire's 1938 lines of electric ranges, water heaters, water coolers, and beverage coolers also were shown. Considerable emphasis was placed on the new electric range line, and the results of Frigidaire's survey of 7,550 women to determine their style and convenience preferences were reviewed.

Sales of electric ranges in 1937 totaled 420,000 units, it was said, and the sales volume predicted for 1938 is 500,000 units. Also, of 22,000,000 wired homes in the United States, only 2,000,000 are equipped with electric ranges; of those not

equipped, 15,000,000 are in regions where electric current rates are low enough to invite installation.

One electric range will be sold for every four electric refrigerators in 1938, it was predicted.

An addition to the line of electric ranges, a special low-priced model L-10 listing at \$109.50 f.o.b. Dayton, was introduced at the convention.

Also introduced were three new water coolers: models BF-3, priced at \$147; PF-35, priced at \$164; and PB-510, priced at \$193.

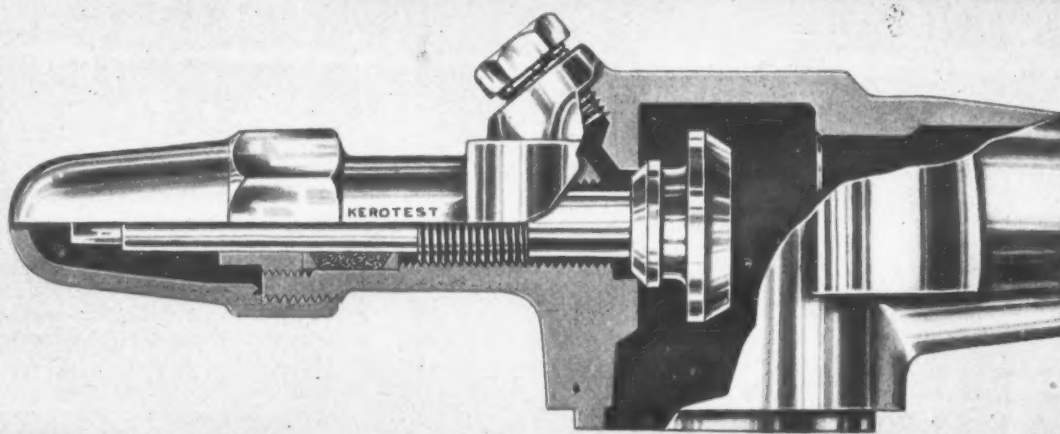
Model PB-510 is equipped with an air-cooled compressor, and may be obtained with a water-cooled compressor at slightly higher cost. Capacity of this model is 5 gallons per hour. Capacity of model PB-35 is from 3 to 5 gallons per hour.

New beverage coolers shown at the convention were models BB-158, listed at \$138; GB-158, listed at \$160; WB-158, listed at \$160; and BB-258, listed at \$257. All models have a capacity of 150 six-ounce bottles, except BB-258 which holds 300 six-ounce or 250 12-ounce bottles.

The new commercial sales album published by the company also was introduced. It is a nine-section book entitled "Frigidaire for Every Refrigeration Need," and is available to dealers through district offices.

GMAC's policies for 1938 were outlined, outstanding innovation being that customers may pay instalments at any of the 4,000 Western Union telegraph offices in the country (see AIR CONDITIONING & REFRIGERATION NEWS, Jan. 26). More than half of the time-payment buyers do not have checking accounts, it was said, making this service even more convenient and economical for them.

**NO REFRIGERATION OR AIR CONDITIONING SYSTEM CAN BE BETTER THAN THE QUALITY OF ITS VALVES AND FITTINGS**



### CHECK THE NEW KEROTEST COMPRESSOR VALVES—

Made with a forged, one-piece body eliminating the conventional separate sweat tube insert which is now an integral part of body and having a removable non-rotating, self-aligning stem head less the attendant chatter associated with non-rotating stems. A concealed spring absorbs vibration and shocks due to pulsation of the compressor, preventing annoying noise.



A vital responsibility rests with the kind of valves and fittings that go into the modern refrigeration or air-conditioning unit. That is why Kerotest builds in terms of ultimate service—why Kerotest has steadfastly maintained the highest standard of quality in the face of cut price competition.

This policy continued over the years has established Kerotest leadership throughout the industry. Today Kerotest Valves, Fittings and Accessories are acceptable as standard by the largest manufacturers of refrigerating equipment in the world.

Kerotest Jobbers, carrying warehouse stocks are located in every important industrial center.

**KEROTEST**

**KEROTEST MANUFACTURING CO.**  
PITTSBURGH, PA.



## Service Methods

### How To Correct Conditions That Cause Draught Beer To Be Foamy, Flat, Cloudy And Bad Tasting, Outlined By Goodwin

BY K. M. NEWCUM

WHY draught beer is foamy, flat, cloudy, bad tasting or has a coarse head was explained to a group of refrigeration and brewery men by James Goodwin, sales engineer, Temprite Products Corp., who conducted the service sessions of a series of dealers' and distributors' educational meetings held recently at the Temprite offices in Detroit.

The three principal requisites of good beer, according to Mr. Goodwin, are: the manner in which it draws; its appearance after being drawn; taste of the beer to the customer.

The taste of the beer to the customer is the point upon which the percentage of draught vs. bottled beer, sold by the particular tavern, hinges.

Mr. Goodwin pointed out that almost anyone would drink draught beer in preference to bottled—if they were sure of getting good tasting draught beer. Many customers have had a glass or two of bad tasting draught beer, pointed out Mr. Goodwin, and are therefore confirmed bottled beer drinkers.

He also declared that there was a slight increase in the sale of bottled beer and a corresponding decrease in draught—simply because too many people have been served bad draught beer.

Pointing out that if a few fundamental rules are followed draught beer can be dispensed with a condition and taste that will completely satisfy even the most confirmed, non-draught beer drinkers, Mr. Goodwin proceeded to outline the reason, cause, and cure for the five principal causes of bad draught beer.

#### Foamy Beer

The reasons for foamy beer may be divided into six major classifications as follows: high exit temperature; low keg pressure; bad faucets; warm beer lines; over carbonation; and restriction.

#### NO. 1. HIGH EXIT TEMPERATURE

High exit temperatures are usually due to a failure or partial failure of the refrigeration system. Shortage of refrigerant, improper switch setting, oil logged evaporator, valves not opened properly, and other general refrigeration service difficulties should be checked.

In case of oil logging an oil

separator should be installed. Oil separators are required on all Tempri-te installations where methyl chloride or Freon-12 is employed.

#### NO. 2. LOW KEG PRESSURE

Causes of low keg pressure are: insufficient keg pressure at start; or pressure was right at start, then the temperature increased when the heating plant was put into operation, inefficient beer pump, or gauge valve plugged or gauge out of calibration. Correct the cause of the condition and raise the pressure on the keg.

#### NO. 3. BAD FAUCETS

Bad faucets may cause the beer to have a swirling action when leaving the faucet, or allow the beer to spit when leaving the faucet. Where the trouble is traceable to the faucet, it should be replaced.

#### NO. 4. WARM BEER LINES

Warm beer lines should be as far removed from all sources of heat as possible. Beer lines should not be in close proximity with steam, hot water, or other high-temperature pipes or ducts. Where the temperature of the space through which beer lines are run is above the temperature of the keg, the lines should be heavily insulated.

#### NO. 5. OVER CARBONATION

Over carbonation of beer is undesirable. It is possible that the beer is over carbonated at the brewery, or some breweries carbonate heavier than others. For a beer with a higher CO<sub>2</sub> content the keg pressure should be increased and the rate of drawing should be reduced.

It is also possible for the beer to become over carbonated when CO<sub>2</sub> is used to maintain pressure on the beer. If the CO<sub>2</sub> pressure upon the beer is too great at certain beer temperatures, CO<sub>2</sub> from the tank will go into solution with the beer and over carbonate it. When this condition exists, an air pump should be used in place of the CO<sub>2</sub> tank gas pressure.

#### NO. 6. RESTRICTION

Restriction of the beer flow through beer-dispensing equipment is often required. The restriction must be in the proper place to effect the desired results.

Kinked beer lines offer a restriction to the natural flow of beer from the keg to cooler. This results in pressure differences at various points in the system. Kinks should be removed. Bends should be reduced to a minimum.

If restriction is needed on a system it should be between the cooler and the faucet. If, however, this location is not desirable due to the warming up action of the beer, the restriction should be located between the cooler and the keg. This restriction should start at the cooler and extend toward the keg. The restriction should never be located at the keg end of the beer line.

Faucets may partially clog up and cause an unnecessary restriction. Obviously the faucet should be thoroughly cleaned.

#### Flat Beer

The principal reasons why beer is drawn flat may be attributed to the coils, the glasses, electric fans, loss of CO<sub>2</sub> (or lack of carbonation in cheap beers), or too low a temperature of the beer.

#### NO. 1. COILS

Dirty coils, or improperly cleaned coils are one of the principal causes of flat beer. The condition of the coils should be checked and if they are not properly cleaned, should be cleaned by an approved method.

#### NO. 2. GLASSES

Body grease on glasses will cause the beer to go flat when it contacts the greasy surface of the glass. Clean hands and clean washing solution will overcome this condition.

Improper cleaning chemicals or soap will leave a greasy film on the surface of the glass and otherwise good beer contacting these surfaces will go flat.

Glasses should be cleaned with a solution using a good alkaline cleaner.

#### NO. 3. ELECTRIC FANS

Electric fans located over the bar, tables or serving station, and blowing into or through the beer stream are a cause of flat beer.

The location of the fan or direction of the airflow should be changed so air currents do not affect the beer.

#### NO. 4. LOSS OF CO<sub>2</sub>

Properly carbonated beer will lose a part or all of its CO<sub>2</sub> content if the keg pressure is not high enough to hold the CO<sub>2</sub> in solution with the beer. To prevent loss of CO<sub>2</sub> the pressure should be increased to correspond with the keg temperature as shown in Table 1 (to be published in the next issue of the NEWS).

Lack of carbonation may be due to under carbonation at the brewery. This condition is usually prevalent with cheap beer, and is very seldom encountered. However, it should be checked as a possibility, especially where low-priced beer is being served.

#### NO. 5. TOO COLD

Beer that is too cold in the keg or pre-cooler or both will be drawn flat. Reason for this is that when the beer is too cold (below 40° at the cooler or 45 to 50° F. at the pre-cooler) it will not liberate a sufficient amount of CO<sub>2</sub>, hence it appears flat.

If the beer is too cold the temperature at the cooler should be raised to 40° and at the keg to 45 or 50° F.

#### Cloudy Beer

Cloudy beer may be bad only in appearance, but it may also be bad tasting. Principal reasons why beer is cloudy are: beer contacting bare metal; too cold; dirty coils and lines.

#### NO. 1. BEER CONTACTING BARE METAL

Block tin tubing is recommended and generally used for beer lines. In addition, however, much of the lines and fittings through which the beer is circulated is plated copper or brass.

The use of a strong cleaning solution may have removed the plating, allowing the beer to contact the bare copper or brass.

When such a condition exists all of the lines, fittings, etc., in the entire beer circuit should be carefully examined. Any part of the system which is devoid of plating should be replaced, and the user instructed as to the proper cleaning solution to use to prevent a recurrence.

The beer drawn from a new installation may be cloudy for the first two or three days. This condition will correct itself.

#### NO. 2. BEER TOO COLD

Beer that is below 45° in the pre-cooler and/or below 40° (plus or minus 1°) in the Temprite cooler may be drawn in a cloudy condition. Correction for this condition is to adjust the temperature to within the recommended range.

#### NO. 3. DIRTY COILS AND LINES

Dirty beer coils and lines are the cause of many draught beer failures, among which is cloudy beer.

Beer coils and lines must be properly cleaned at regular intervals.

(Editor's Note: Remainder of this article on getting good beer will be published next week.)

#### Rutledge Heads District For Utilities Engineering

CHICAGO—Paul Rutledge, former Missouri-Kansas district manager for Utilities Engineering Institute, has been promoted to the district manager's post in western Pennsylvania.

### CLASSIFIED ADVERTISING

RATES: Fifty words or less in 6-point light-face type only, one insertion, \$2.00, additional words four cents each. Three insertions \$5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with Box No. should be addressed to Air Conditioning & Refrigeration News, 5229 Cass Ave., Detroit, Mich.

#### FRANCHISES AVAILABLE

COMPLETE LINE of refrigerator display cases, walk-in coolers, and refrigerators for meat markets, grocers, restaurants, etc. Sell with Ehrlich line of compressors, or with any other line of machines. Attractive discounts, also liberal financing arrangements to help sell. 69 years in business. Write for full information and catalog. H. EHRlich & SONS MFG. CO., Refrigerator Builders, St. Joseph, Mo.

#### EQUIPMENT FOR SALE

CLOSE-OUT BARGAINS on replacement parts for Mayflower commercial and domestic units as manufactured by Trupar. Subject to prior sale. Large stock of repairs for Brunner and "M. & E." commercial units for prompt deliveries. Phone or write to SAM S. GLAUBER, INC., 515-529 E. 79th Street, New York City.

#### REPAIR SERVICE

DOMESTIC CONTROLS repaired. Ranco pencil types \$1.75. General Electric, Cutler-Hammer, Tag, Penn, Ranco box types \$2.00. Bishop Babcock, Majestic, Penn magnetic types \$2.50. Mayson and Detroit valves \$1.15. Thermostatic expansion valves \$3.50. All calibrated to factory specifications. UNITED SPEEDOMETER REPAIR COMPANY, 436 West 57th Street, New York City.

#### PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. H. R. VAN DEVENTER (ASRE), Patent Attorney, 342 Madison Avenue, New York City.

Every facility of Servel's vast factory is available to meet your refrigeration needs, whether large or small.

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Write For Details Servel, Inc., Electric Refrigeration And Air Conditioning Division, Evansville, Ind.

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There is no guess work about STREAMLINE. The solder inserted through the feed hole (an exclusive feature) completely seals the bonding surfaces, and its appearance at the end of the fitting assures you, beyond all doubt, that the joint is refrigerant proof, that vibration cannot work it loose, and that it is permanent and actually stronger than the tube itself.

STREAMLINE Forged Brass Fittings are furnished in complete range in couplings, tees, elbows, etc., with male and female ends and in reducing sizes. Send for Catalog and Price List 2003 illustrating our complete line of Valves, Fittings (solder type and flare), Dehydrators, Strainers, etc., for Mechanical Refrigeration.

**MUELLER BRASS CO.**

PORT HURON, MICHIGAN



## Where Air-Conditioning Systems Were Installed In Chicago In 1937

(Compiled by Commonwealth Edison Co. Air-Conditioning Division)

Name and Address Installation Hp. Tonnage

### Amusements

Schulz's Recreation Parlor, 934 S. Ashland Ave. Wittenmeier 33 30

### Banks

Federal Savings & Loan, 3517 S. Archer Ave. West-Kroeschell 5.75 5

### Barber Shops

Schranz, A., 32 W. Washington St. Ilg-III. Htg. 0.5 0.5

### Beauty Shops

Bea's Beauty Shop, 849 E. 55th St. Airtemp-Gen. Appl. 3.25 3  
Irene's Beauty Shop, 1507 E. 53rd St. Airtemp-Gen. Appl. 3.5 3  
Marvel Beauty Parlor, 5118 Fullerton Ave. Carrier-West. Hair. 5 5  
Superior Beauty Shop, 1743 W. 63rd St. Carrier-West. Hair. 5 5  
Winsberg Beauty Shop, 6201 N. Clark St. Airtemp-Gen. Appl. 3.25 3

### Brokers & Exchanges

Carley & Co., 134 S. LaSalle St. York-CE 1 1

### Clubs

Chicago Athletic Club, 12 S. Michigan Ave. Carrier 24 75  
Chicago Athletic Club, 12 S. Michigan Ave. Norge-Sampson 2 2  
Covenant Club, 10 N. Dearborn St. Norge-Sampson 3 3  
Racquet Club, 1361 N. Dearborn St. Kelv.-Wittenmeier 8.5 7.5

### Doctors & Dentists

Breck, M. A., 6701 Northwest Hwy. Norge-Sampson 0.5 0.5  
Cavanaugh, T., 753 E. 79th St. Carrier-C.E. 0.75 0.75  
Doyle, F. L., 300 S. Cicero Ave. Frigidaire 0.75 0.75  
Dunn, E. S., 25 E. Washington St. Norge-Sampson 1 1  
Elgin, G., 916 W. 59th St. Frigidaire-C.E. 0.75 0.75  
Frey, L. U., 22 W. Division St. Frigidaire-C.E. 0.75 0.75  
Gilbert, M. C., 104 S. Michigan Ave. York-Harry Alter 0.75 0.75  
Hamilton, 52 E. Washington St. Carrier-C.E. 0.75 0.75  
Hansich, E. J., 3223 N. Ashland Ave. Frigidaire-C.E. 0.75 0.75  
Hedges, L. E., 6699 Northwest. Frigidaire-C.E. 0.5 0.5  
Libberton, R. E., 7359 Cottage Grove Ave. Norge 0.75 0.75  
Libberton, R. E., 7359 Cottage Grove Ave. Norge-Sampson 1 1  
Lundy, 122 S. Michigan Ave. General Electric 2 2  
Lutton, E. A., 7839 Eggleston Ave. Carrier-C.E. 0.75 0.75  
Phillips, H., 5457 S. Ashland Ave. Air-Devices 0.5 0.5  
Roling, E. A., 2753 W. North Ave. Frigidaire-C.E. 0.5 0.5  
Rubel, Maurice, 1209 Astor Ave. Norge-Sampson 1 1  
Schwartz, Fred, 109 N. Wabash Ave. Norge-Sampson 1 1  
Shelly, L., 1003 S. 17th Ave. Kelvinator 0.5 0.5  
Siedlinski, V. E., 4143 Archer Ave. York-Frigidaire-C.E. 1.25 1.25  
Sullivan, Harold, 4757 W. Madison St. Norge-Sampson 1 1  
Thasher, D. R., 1150 N. State St. Pleasant Air-H.A. 0.25 0.25  
Winters, 1022 N. Kedzie Ave. Carrier-C.E. 0.75 0.75  
Wojniak, F., 4649 S. Ashland Ave. Frigidaire-C.E. 0.75 0.75  
Zurndorfer, W., 111 W. North Ave. Kelvinator-C.E. 0.75 0.75

### Funeral Parlors

Anderson, Chas. W., 4325 Armitage Ave. Airtemp-Gen. Appl. 6.5 6  
Bentley, A. L., 2701 N. Clark St. Curtis-Nat. Korect 18 15  
Boland & Son, 4138 W. Madison St. Airtemp-Gen. Appl. 3.5 3  
Boydston Bros., 4227 Cottage Grove Ave. Carrier-Air Comfort 17 15  
Griessel, Adam & Son, 8944 S. Commercial. Climax 7.5 5  
Kelly, Peter M., 238 S. Cicero Ave. Airtemp-Gen. Appl. 3.5 3  
Kenny Bros., 5442 S. Halsted St. Excel-Hilger 24 20  
Lain & Son, 5500 N. Clark St. Frick-Midwest 55.5 35  
Lanyon, L. H., 415 W. 63rd St. Frigidaire-C.E. 3.25 3  
May, John V., 4559 Milwaukee Ave. Frick-Midwest 30 30  
Mueller, Henry W. & Son, 5308 W. Belmont. Airtemp-Gen. Appl. 3.25 3  
O'Hanley & Son, 7705 S. Cottage Grove Ave. Airtemp-Gen. Appl. 3.25 3  
Palmer & Lauer, 4223-25 W. Roosevelt Rd. 24 20  
Sheldon, H. D., Inc., 5708 W. Madison St. York-West. & Camp. 23 20  
Wold & Wold, 3337 W. North Ave. Howe-City Refrig. 10 10  
Zimmerman Undertaker, 1648 W. 63rd St. Fairbanks-Scheur 16 15

### Hospitals

Billings (one room) Midway. Carrier-Air. Comf. 0.75 0.75  
Michael Reese, 29th & Lake Ave. Ilg (addition) 1.5 1.5  
Municipal "TB" San., 5601 N. Pulaski Rd. General Electric 1 1  
St. Anthony Hospital, 19th & Marshall Blvd. Kelvinator 1.5 1.5  
St. Luke's Hospital, 1439 S. Michigan Ave. York 0.75 0.75

### Hotels

Chicagoan, 65 W. Madison St. Vilter 50 50  
Crillon, 1256 S. Michigan Ave. Lipman 10.5 10  
Eastgate Hotel Co., 162 E. Ontario. G-E-Adv. Heat-Kaiser 22 20  
Palmer House, 19 E. Monroe St. Carrier 1,005 1,000  
Stevens, 10th & Michigan Ave. Stand Air-Cond. 30 30

### Bakery

Schlusser Bakery, 4822 Lincoln Ave. Carrier 4.5 3

### Candy

Helen Harrison Candies, 325 N. Wells St. York-West. & Camp. 16.5 15  
Johnson, Walter H., 341 W. Superior St. Vilter (addition) 18 0  
Nutrine Candy Co., 419 W. Erie St. Carrier 47.5 40  
Nutrine Candy Co., 445 W. Erie St. Carrier-Air Com. 10.5 7.5  
Williamson Candy Co., 4701 Armitage Ave. Vilter (addition) 85 0

(Continued on Page 20, Column 4)

## Cornell Now Offers Advanced Courses In Air Conditioning

ITHACA, N. Y.—Growing interest among undergraduates in advanced air-conditioning courses is indicated in the announcements by Cornell university authorities of a new heat-transfer laboratory in the Sibley School of Mechanical Engineering.

Seniors in mechanical engineering at Cornell are required to take a heating and ventilating course given by Prof. William M. Sawdon, and this year 15 students have elected a new optional air-conditioning course directed by Prof. Charles O. Mackey.

University authorities announced that facilities in the air-conditioning research field have been expanded through recent acquisition of modern apparatus developed by Willis H. Carrier, '01, chairman of the board of Carrier Corp., Syracuse, N. Y. Mr. Carrier took his engineering degree from Cornell and shortly after he was graduated he made pioneer air-conditioning studies in a Brooklyn lithography plant.

In recognition of his contributions to air-conditioning development, the Cornell chapter of Phi Kappa Phi on Jan. 13 elected Mr. Carrier an honorary member of that scientific fraternity. Mr. Carrier gave a speech at the induction ceremonies on "Contributions of Science to Industry."

## Portable Potentiometer Developed By G-E

SCHENECTADY—A new portable dewpoint potentiometer for use in determination of moisture content of atmosphere in industrial metal-heat-treating furnaces has been announced by General Electric Co.

The instrument consists of a polished, metallic mirror placed in a small chamber in such a manner that it can be seen through a sight glass. Means are provided for cooling the mirror and reading its temperature.

Gas to be tested is passed continuously through the chamber. As the temperature of the mirror is lowered by a jet of another gas from a storage tank directed against the back of the mirror, a spot of dew appears when the dewpoint temperature of the gas being tested is reached.

Mirror temperature may be read at the instant the dew appears by a light-gauge thermocouple and balancing circuit with direct-reading meter. Range is from minus 40 to plus 130° F.

## New Seamless Tanks Are Introduced

NORRISTOWN, Pa.—Victor seamless copper tanks and boilers, one-piece seamless units made by a patented electro-deposit process which involves no brazing, welding, or riveting, are now in production and ready for delivery, according to the manufacturer, Victor Mauck Seamless Copper Tank Co.

Prices of these units are said to be comparable to those of ordinary seamed or riveted non-ferrous boilers. Literature on the line is available.

## For Everyone Interested In ECONOMICAL AIR CONDITIONING



Send now for this New 16-page Insulation Manual that tells why, how and where to install PALCO WOOL, the Redwood bark insulation that provides PERMANENT THERMAL EFFICIENCY (.255 B.t.u., Peebles test) at lowest possible cost.

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CHICAGO LOS ANGELES NEW YORK

## New Control By Brown Affords New Means Of Measurement

PHILADELPHIA—Brown Instrument Co., division of Minneapolis-Honeywell Regulator Co., has developed a new control process incorporating pneumatic remote transmission of measurement. The new control is designed primarily for remote measurement of process variables in atmosphere containing explosive gases where electrical measurement is not permissible.

It consists essentially of a transmitting indicating instrument installed at the point of operation and a receiver, either an indicator or recorder, on the remote master control board.

Remote transmission unit is a simple, balanced air pilot, mechanically actuated, built into the indicating transmitter. Receiver is a pressure gauge, calibrated in terms of the variables being measured.

The system gives a definite pressure response for less than 1/40% of full scale movement of the measuring element, and the receiver records less than 1/4 of 1% change. Air consumption is .016 cu. ft. of free air per minute.

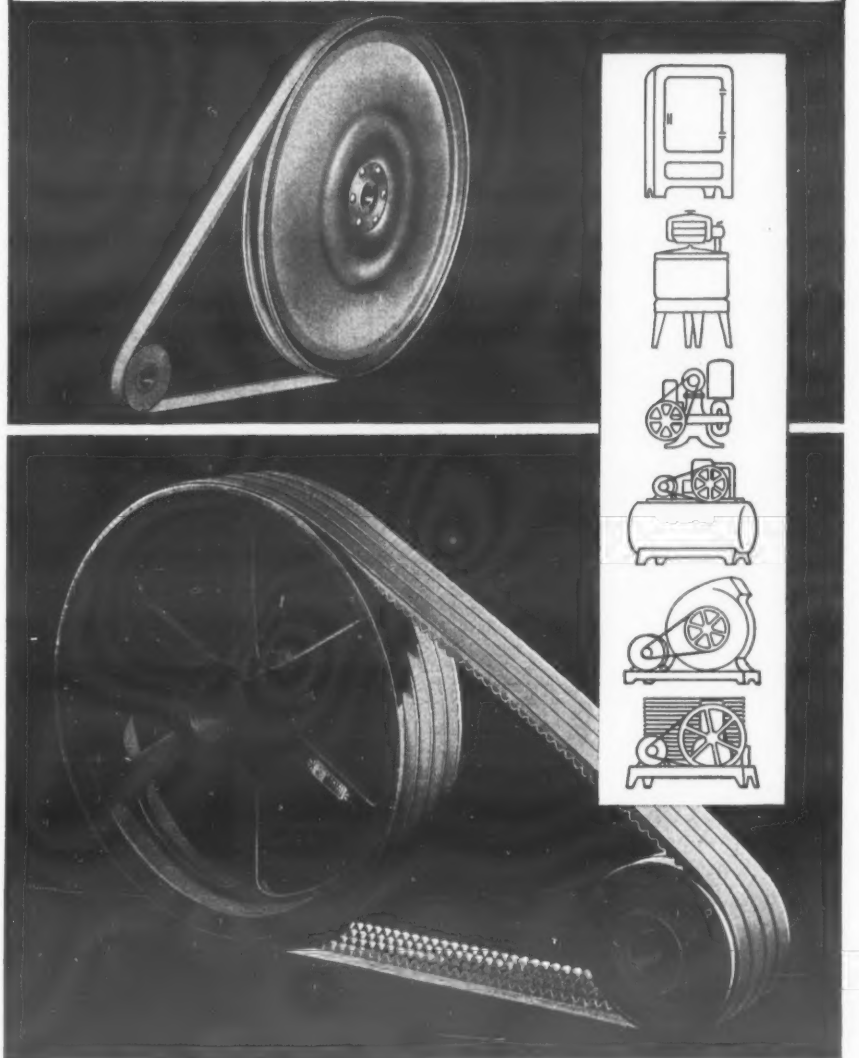
A 1% change in metered value can be transmitted 200 feet in less than a second, it is claimed, and a full scale change in 20 seconds.

Ambient temperature change of 60° F. affects readings less than 1/4 of 1%, and the system is said to operate efficiently at sub-zero temperatures.

## 'Neoprene Notebook' Is Issued By Du Pont

WILMINGTON, Del.—Vol. 1, No. 1 of "The Neoprene Notebook," a publication designed to give engineers and manufacturers the latest engineering information, laboratory data, and application reports on neoprene, du Pont-made synthetic rubber product, has just been issued by the rubber chemicals division, E. I. du Pont de Nemours & Co.

## DAYTONS END THE GRIEF OF BELT FAILURE



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and quietly. They stand up straight and run true in the pulley grooves. No twisting and whipping! No squashing and sagging! No stretching and slipping! Unheard and unnoticed, they give efficient, dependable service far beyond the lives of other belts.

Dayton V-Belts are made in a complete range of sizes and lengths to fit all makes of electric refrigerators, washers, ironers, stokers, water pumps, air compressors, blowers, condensing units, etc. They are immediately available from Dayton Distributors everywhere to meet your exact requirements.

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### New Air Circulator Introduced By Kisco

ST. LOUIS—A new air-circulating device known as the Kisco Cool-Circle-Ator Table is being marketed by Kisco Co., Inc., manufacturer of ventilating equipment.

This device consists of a specially designed fan, enclosed in a protective grille, which is mounted in the base of a modern circular table, with tubular metal legs, in such a way that it throws air up and out beneath the table top and draws air in at the bottom.

The table, top of which may be removed for use as a tray, may be used as a serving table or miscellaneous table.

### New Lighting Equipment Affords Better Light, Less Heat Load, Says G-E Engineer

NEW YORK CITY—Because of the present tendency toward increase of artificial illumination in the interests of reducing eye strain and conserving eyesight, this source of summer air-conditioning load is constantly growing. However, there are ways to minimize it, it was brought out in a paper presented by Walter Sturrock, illuminating engineer, General Electric Co., before the recent annual meeting of the A.S.H.V.E.

Mr. Sturrock's paper deals primarily with two methods of reducing the heat load resulting from artificial

illumination. One of these methods is to increase the lighting efficiency of the lamp so that fewer watts are required for a given intensity of illumination, while the other method is to remove the heat energy which is given off into the conditioned space before it can be imposed upon the air-conditioning equipment.

Rise in lighting efficiency is obtained not only by increase in efficiency of the lamp itself, but also by use of improved reflective surfaces, by means of which a greater proportion of the light given off by the lamp is reflected into the portions of the room where it will do the most good, the speaker declared.

For the installation where the lighting load is very heavy, it may prove economical to remove a portion of the heat given off by the lamp by means of special exhaust systems. Other means of heat removal also are discussed.

The following methods of obtaining higher lighting efficiency were discussed:

The use of fewer large lamps to obtain a given intensity of illumination because of the higher lighting efficiency of the larger unit.

The use of the mercury vapor lamp for installations where its color is not objectionable. The speaker gave the average efficiency of the mercury vapor lamp as being 30 lumens per watt as compared to an average efficiency of 20 lumens per watt for the incandescent lamp.

The use of the new fluorescent lamp as soon as it is available commercially.

The use of more efficient reflectors. The shaping of adjoining ceilings to form reflective surfaces.

The use of reflective paints upon adjacent surfaces.

The following methods of heat removal were discussed:

Mechanical exhausting of air through the lighting fixture. The air requirement was stated as being approximately 1,000 c.f.m. per kilowatt. (The speaker stated that for lighting loads of less than 10 watts per sq. ft. of floor area, the mechanical exhausting of air was not economically justified, but that for greater loadings the cost of the exhaust system was justified because of the resultant reduction in heat load upon the air-conditioning equipment).

The circulation of cold distilled water through a water jacketed fixture.

Construction of the lighting fixture of heat absorbent glass, as this arrangement keeps a portion of the heat up near the ceiling where it does not heat up the occupancy zone.

Introduction of the conditioned air into the room in such a way that stratification near the ceiling is not disturbed, as this arrangement tends to keep a portion of the heat up near the ceiling where it is absorbed by the ceiling construction.

Regarding the use of reflective surfaces, Mr. Sturrock made the following statement.

"The total wattage required to provide a specified level of illumination for an interior depends to a great extent on the percentage of the light generated by the lamp (utilization coefficient) which actually reaches the working area. This utilization of light depends not only upon the ability of the side walls and ceiling to redirect light but also upon the total light output of the reflector

(Concluded on Page 21, Column 1)

### 1937 Chicago Air-Conditioning Installations (Cont.)

(Continued from Page 19, Column 1)

Name and Address	Installation	Hp.	Tonnage
<b>Printing</b>			
A. B. Dick & Co., 3040 W. Lake St.	Carrier	249	200
American Decalcomania, 4326 W. 5th Ave.	Carrier	125	100
Daily Times, 211 W. Wacker Drive	York-West. & Camp.	2.25	2
Henneberry Rotogravure, 4001 Ravenswood	West-Kroeschell	34.5	30
Meyercord Co., 5335 W. Lake St.	Carrier	12	0
Tablet & Ticket Co., 1015 W. Adams St.	York-West. & Camp.	40	40

### Miscellaneous

Chicago Transformer Co., 3501 W. Addison	Ilg-Hansen	3	3
Fabart Instrument Co., 4740 N. Clark St.	Wittenmeier	100	100
Heineman, Oscar, 2701 W. Armitage Ave.	Carrier	15	15
New York Central, LaSalle St. Station	Car Cooling	500	500
Portland Cement Assn., 33 W. Grand Ave.	York-West. & Camp.	2.5	2
Quaker Oats Co., 2500 S. Cottage Grove Ave.	Carrier	5.75	5

### Offices, General & Buildings

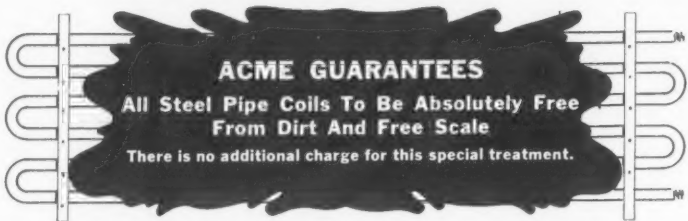
Acme Steel Co., 101 E. 134th St.	Worth-Hoier-Haines	260	190
Air Comfort, 1307 S. Michigan Ave.	Carrier-Air Comfort	6.5	6
Aircure Co., 166 W. Washington St.	Ilg-Hansen	5.25	5
Alfred, Decker & Cohn, 416 S. Franklin St.	West-Kroeschell	3	3
American Electric Fusion Corp., 2606 W. Diversey	Curtis	17	15
Austin Co., M. B., 108 S. Desplaines St.	Deissler-Reliable	10	10
Balaban & Katz, 175 N. State St.	Carrier-Air Comfort	24	24
Belden Mfg. Co., 4647 W. Van Buren St.	West-Kroeschell	61.5	50
Benefit Assn., R.R. Emp., 901 Montrose Ave.	West-Kroeschell	58	50
Blackhawk Club, 139 N. Wabash Ave.	Airtemp-Hoier	28	25
Blums, Inc., 624 S. Michigan Ave.	Reliance Blakaire	3.25	3
Brunswick-Balke, 632 S. Wabash Ave.	Carrier-Adv. Heat	130	100
Budd, Britton I., 72 W. Adams St.	G-E-Baldwin	8.5	7.5
Carnegie Ill. Steel Co., 3426 E. 89th St.	Carrier-Air Comfort	13	10
Chicago Flexible Shaft, 5600 Roosevelt Rd.	Howe-Assembled	30	30
C. E. Auditorium, 140 S. Dearborn St.	West-Kroeschell	88	65
Continental Products, 2036 S. Michigan Ave.	Airtemp-Gen. Appl.	3	3
Cravens, Barrett, 3255 W. 30th St.	Airtemp-Gen. Appl.	6.75	6
Dealers Transport Co., 100 W. 91st St.	G-E-McDonald Truck	20	15
DePaul University, 64 E. Lake St.	York-West. & Camp.	28	25
Edelman, E. & Co., 2332 Logan Blvd.	Airtemp-Gen. Appl.	3.25	3
Essaness Theaters, 540 N. Michigan Ave.	Kelvinator-Witten.	3.5	3
Fairmount R. R. Motors, 310 S. Michigan.	Carrier-Air Comfort	3.25	3
Field, Marshall, Estate of, 135 S. LaSalle.	West-Kroeschell	17	15
Fruehoff Trailer, 2553 S. Archer Ave.	Curtis-Nat'l Kor.	10.5	7.5
General Mortgage & Invest., 1205 N. Dearborn	Carrier-Air Comfort	62.5	50
General Motors Corp., 840 N. Michigan Ave.	Frigidaire-Gal.	107.5	80
Gym Club, 180 W. Randolph St.	Frick-Midwest	10	10
Harlan-Allen Associates, 10 LaSalle St.	Carrier-Air Comfort	5.5	5
Household Finance Co., 919 N. Michigan.	Carbon-Kroeschell	158	120
Hyatt Roller Bearing, 332 S. Michigan Ave.	Frigidaire	8	7.5
Hydrox Corp., 2400 S. Lake Park Ave.	West. & Camp.	1	(Brine)
Jacobs, Jos. O., 5244 Broadway	Excel-Hilger	23	20
Katzinger Co., Edward, 1947 N. Cicero Ave.	York-West. & Camp.	35	30
Kraft-Phenix Cheese, 500 Peshtigo Court.	Baker-Burge	647	400
Lake Michigan Bldg., 180 N. Michigan Ave.	Carr-Mehr-Hansen	649	400
Merchandise Mart, 222 Bank Drive	Carrier	696	350
Mergenthaler Linotype, 531-37 Plymouth Ct.	Carrier-Air Comfort	17	15
Motorola Radio Mfg. Co., 4545 W. Augusta Blvd.	G-E-Adv. Heat	23	20
Meyercord Co., 5300 W. Lake St.	Moffitt (well water)	10	0
National Tea Co., 1000 Crosby St.	Curtis-Nat. Kor.	46	40
National Vulcan Fibre Co., 2808 W. Lake St.	Fair-Morse-Adv. Heat	11.5	10
Neilsen, A. C., Inc., 2101 Howard St.	West-Kroeschell	59.5	50
North American Bldg., 36 S. State St.	Vilter	186	175
Pace Mfg. Co., 2901 S. Indiana Ave.	Carrier-Air Comfort	12	10
Pacific Flush Tank Co., 4241 Ravenswood.	York-West. & Camp.	5.5	5
Polish National Alliance, 1520 W. Division.	Frigidaire-Gal. & Spec.	62.5	50
Proctor & Gamble, 1232 W. North Ave.	York-West. & Camp.	26	20
Reliable Electric Co., 3145 Carroll Ave.	Carrier-Air Comfort	5.75	5
R.C.A., 357 E. Illinois St.	Frigidaire-Gal. & Spec.	67	50
Sanchez Cheese Co., 3738 W. 63rd St.	Frick-Midwest	2.25	2
Straus & Schram, 1105 W. 35th St.	Frick-Midwest	5	5
Times Publishing Co., 211 W. Wacker Dr.	York-Moffett	8.5	7.5
Underwriters Laboratory, 207 E. Ohio St.	G-E-Gal. & Spec.	17	15
Universal Parts, Inc., 1529 S. Michigan Ave.	Frick-Midwest	2	2
University of Chicago, Midway	Carrier-Phil. & Get.	150	100
Union Tank Car Co., 228 N. LaSalle St.	Frigidaire-Baldwin	38	30
United Autograph Co., 5000 S. California	Carrier-Kaiser	16.5	15
United Wallpaper, 3330 Fillmore Ave.	Vilter	40	40
White Stokes, 3615 S. Jasper Pl.	Vilter	26.5	25
Wilson Brothers, 528 S. Wells St.	Carrier-Air Comfort	15	15
Zenith Radio Corp., 6001 W. Dickens	Carrier	153	100

### Offices, Private

Adrianson, G. W., 72 W. Adams St.	York-C.E.	0.75	0.75
Armour, E. Watson, 221 N. LaSalle St.	York-C.E.	1	1
Armour & Co., Board of Trade Bldg.	Kelvinator	0.75	0.75
Armour & Co., Board of Trade Bldg.	Kelvinator	2	2
Arrow Mill Co., 4446 W. 26th St.	Norge-Sampson	1	1
Assoc. Underwriters, 135 S. LaSalle St.	Carrier-Air Comfort	0.75	0.75
Bally Mfg. Co., 2640 W. Belmont Ave.	Pamco	0.75	0.75
Banco Di Napoli, 1601 W. Roosevelt Rd.	Norge-Sampson	0.5	0.5
Bank, H. W., 140 S. Dearborn St.	Pamco	0.75	0.75
Barkrock, Moses, 231 S. LaSalle St.	York-Harry Alter	1	1
Bee-Dee Management, 100 N. LaSalle St.	Air Devices	1	1
Bendix Radio Corp., 60 E. 25th St.	Air Devices	4.5	4
Berningham & Prosser, 128 S. Sangamon St.	Air Devices	1.75	1.5
Block, Lewis H., 185 N. Wabash Ave.	Frigidaire	0.75	0.75
Blythe Co., 135 S. LaSalle St.	Frigidaire-C.E.	0.75	0.75
Board of Education, 228 N. LaSalle St.	Pamco	0.75	0.75
Borg & Beck, 6358 S. Menard Ave.	Norge-Sampson	2	2
Browne, A. S., R. R. Exchange	Frigidaire	0.75	0.75
Burton Dixie Corp., 2024 S. Racine Ave.	Kelvinator	1	1
Byrne, C., 135 S. LaSalle St.	Pleasant-C.E.	0.25	0.25
Campbell, D. S., 120 S. LaSalle St.	Air Devices	0.5	0.5
Canfield, A. J., 6788 S. Chicago Ave.	Frigidaire-C.E.	0.75	0.75
Canner Pub. Co., 140 N. Dearborn St.	Deissler-Baldwin	2	1.5
Carter, A. B., 118 N. Dearborn St.	Carrier-C.E.	0.75	0.75
Caskin, F., 4601 S. Ashland Ave.	Pleas.-C.E.	0.25	0.25
Central National Bank, 728 W. Roosevelt Rd.	Kelvinator	1	1
Central Greyhound, 1157 S. Wabash Ave.	General Electric	1	1
Chicago Daily Times, 211 W. Wacker Dr.	Frigidaire	2	2
Chicago Mill & Lumber Co., 111 W. Washington St.	Carrier-C.E.	0.75	0.75
Chicago Truck Leasing Co., 609 S. Wabash	Frigidaire-C.E.	1.5	1.5
Chicago Truck Leasing Co., 609 S. Wabash	Frigidaire	0.75	0.75
Christiansen, J. J., 228 N. LaSalle St.	Carrier-C.E.	0.75	0.75

(Concluded on Page 21, Column 1)

### PIPE COILS



Jackson

ACME INDUSTRIES, Inc. Michigan

### Seepage-Proof FITTINGS

"Built Right to Stay Tight"

Every style and size of forged flared tube fitting for the refrigeration industry is available from standard stock at Commonwealth.

Thousands of semi-standard patterns enable us to quickly furnish any desired variation in pipe and tube ends.

Special fittings made to order.

Commonwealth fittings are correctly designed, carefully machined, and tube seats are protected in shipping.

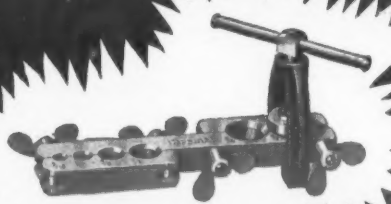
25 years of service to the industry.

### COMMONWEALTH BRASS CORPORATION

Commonwealth at Grand Trunk R. R. DETROIT, MICH.

### THIS IMPERIAL FLARING TOOL has EVERYTHING

THIS flaring tool flares copper or brass tubing to make up S. A. E. flared joints without cracking or splitting. When S. A. E. flared fittings are used a proper flare of the tubing is necessary to prevent leakage. This is especially true in refrigeration or air-conditioning work, when using refrigerants such as sulphur dioxide, methyl chloride, freon, etc. The Imperial Flaring Tool No. 175-F, with its self-centering yoke, gives the proper flare to copper or brass tubing to make up S. A. E. flared joints on 3/16", 1/4", 3/8", 1/2", 5/8" and 3/4" outside diameter tubing.



- Wide range—3/16", 3/4", O.D. tubing.
- No vise required.
- No loose dies to get lost or mislaid.
- Tubing can be clamped, flared and removed in less than 30 seconds.

No. 175-F \$4.85 ea.

IMPERIAL BRASS MFG. CO.

565 S. Racine Avenue, Chicago, Ill.

### IMPERIAL COPPER TUBING Service Tools

CUTTING • FLARING • BENDING • COILING • PINCH-OFF • SWEDGING

### PEERLESS FIN COILS — "SALES CLINCHERS"

According to Webster—a "clinch" ends an argument. The making of a sale is a friendly argument terminated by a "clinch" action. Peerless Fin Coils are "sales clinchers" that enable hundreds of refrigeration salesmen to make more sales and more profit.

Peerless Fin Coils have five sales "clinch" features—with a dynamite selling wallop in every one—

1. Peerless "Rifled" Tubing—A 30% Efficiency Bonus.
2. Wedge-Locked—The Perfect Fin to Tubing Bond.
3. Edge-Locked—For Great Strength.
4. Non-Soldered Return Bends—Where There Are No Joints—There Can Be No Leaks.
5. One Inch Spacing Between Coil Courses—Free Air Circulation—Higher Efficiency.

### PEERLESS of America, Inc.

Established in 1912 as the Peerless Ice Machine Company  
 New York Factory 43-20 34th Street  
 Main Factory—General Offices 515 W. 35th Street  
 Chicago 3000 S. Main Street  
 Pacific Coast Factory 3000 S. Main Street  
 Los Angeles

PEERLESS JOBBERS IN ALL PRINCIPAL CITIES

BUY PEERLESS FOR PERFORMANCE



## Modern Lighting Equipment Will Cut Heat Load

(Concluded from Page 20, Column 3)  
or diffusing globe in which the lamp is placed.

"Recent developments in higher reflection factors for paints and in the light reflection properties of aluminum are of special interest. A new finish, known as Alzak, has not only increased the light output of aluminum reflectors but also has provided a surface which resists abrasion and when dirty can be readily cleaned to restore its initial efficiency.

"A recent lighting installation for a small office was designed so that small indirect aluminum reflectors directed the light toward a special ceiling which was also of aluminum. In this case, the utilization of light was 32% as compared with 24% which would have been obtained from a conventional lighting system.

"In other words, in order to get an equal level of illumination from a conventional system the wattage load would have been 1 1/2 times as great.

"A large public utility located in Detroit has recently completed the lighting design for a new office building. A feature of particular interest is the use of ceiling coffers for lighting units. They are about 4 feet square and 15 inches deep, and are designed to utilize the space between the large air ducts in the ceiling running lengthwise of the building.

"By using a silvered bowl lamp in each of these coffers the utilization of light is approximately 42%, which is exceptionally good.

### OTHER ABSORBING METHODS

Other heat absorbing methods were explained by Mr. Sturrock as follows:

"It is generally known that water will readily absorb practically all the long-wave infra-red radiation, that is, wave lengths longer than 1.4 to 1.6 microns. On the other hand, water transmits a high percentage of the energy appearing in wave lengths shorter than 1.0 to 1.2 microns which includes the visible energy.

"From this it is obvious that lighting units with cold water jackets instead of cold air would greatly facilitate the elimination of heat immediately at the light source. A light source adopting this feature was developed several years ago and recent designs based on the original features have found practical application for the lens-type photographic enlargers.

"The unit consists of a distilled water jacket surrounding the lamp and a submerged coil through which cold water is continuously circulated. Tests on such a device employing a 1,500-watt projection-type lamp indicate the 75% of the radiant energy is absorbed by the water while the sacrifice in total light output is only of the order of 20%; although this method of dispersing the heat from an artificial lighting system is entirely practical under certain conditions, yet its general application for large interiors appears somewhat remote at the present time.

### HEAT-ABSORBING GLASS

"Another medium for absorbing radiant energy from incandescent lamps has been developed in a heat-resisting, heat-absorbing glass having a 2-millimeter thickness which will absorb 79% of the total energy generated from a 500-watt projection lamp.

"The light transmission of this special glass is still maintained fairly high, being approximately 75%. Plates of this glass are available for use in false ceilings above which artificial lighting systems can be installed.

"With such a system a circulation of air could be produced to cool the glass plates and thereby to provide a method of eliminating a high percentage of the radiant energy from a lighting system before that energy is set free in an interior.

"The color of the light emitted by mercury lamps has the characteristic mercury vapor line spectrum in contrast to the continuous spectrum of the incandescent lamp," explained the speaker.

"This means that all the light from the mercury arc is represented by only a few bands which produce yellow, green, and blue light. Red is practically absent.

## 1937 Chicago Air-Conditioning Installations (Cont.)

(Concluded from Page 20, Columns 4 and 5)

Name and Address Installation Hp. Tonnage

### Offices, Private (Continued)

Cooper, H., 134 S. LaSalle St.	Carrier-C.E.	0.75	0.75
Crescent Eng. Co., 1109 S. State St.	York-Harry Alter	0.75	0.75
Dick, E., 1753 W. Congress St.	Carrier-Air Comf.-C.E.	3	3
Diener, Mr., Monadnock Bldg.	Deissler-Airgard	1	1
Droll Patents Corp., 351 E. Ohio St.	G-E-Baldwin	1	1
Edgewater Beach Hotel, 5349 Sheridan Rd.	Air Devices	1	1.5
Elliott Furniture Co., 17 N. State St.	York-Harry Alter	1.5	1.5
Enterprising Paint Co., 1015 Hyde Park	York-C.E.	1	1
Eppenstein, Jas. F., 35 E. Wacker Dr.	G-E-Baldwin	2.25	2
Fell, A. L., 2912 Commonwealth Ave.	Pamco	1.25	1.25
Fuller Crittenden Co., 130 S. LaSalle St.	Air Devices	0.5	0.5
Gen'l. Fireproofing, 36 S. State St.	Frigidaire-C.E.	0.75	0.75
General Porcelain, 2700 N. Karlov Ave.	Frigidaire	0.75	0.75
General Outdoor Adv., 515 S. Loomis Ave.	Airtemp-Gen. Appl.	3.25	3
General Scientific Corp., 4829 S. Kedzie Ave.	Pamco	0.75	0.75
Gits Bros. Mfg. Co., 1848 S. Kilbourn Ave.	Frigidaire	0.75	0.75
Glader Corp., 110 S. Dearborn St.	Frigidaire-C.E.	0.75	0.75
Grand Woodworking Co., 4147 W. Ogden	Pamco	0.75	0.75
Guardian Elec. Co., 1621 W. Walnut St.	Pamco	0.75	0.75
Haas, Inc., H. R., 337 S. Franklin St.	Kelvinator	1.5	1.5
Hansman Studio, 1809 Indiana Ave.	Pleasant Air-C.E.	0.25	0.25
Hargrave Co., Geo. E., 145 N. Clark St.	York-C.E.	1.75	1.75
Hart, E. S., 7 S. Dearborn St.	Vilter	1	1
Heckman, Works, Mach., 4026 W. Lake St.	Pamco	0.5	0.5
Hercules Life Ins. Co., 925 S. Homan Ave.	York-Harry Alter	0.75	0.75
Hercules Life Ins. Co., 925 S. Homan Ave.	York-C.E.	0.75	0.75
Herbst, L. B., 5 S. Wabash Ave.	Pamco	0.5	0.5
Hutchinson, W. H., 1031 N. Cicero Ave.	Norge-Sampson	0.5	0.5
Ill. Comm. Comm., 160 N. LaSalle St.	Kelvinator-Witten.	3.5	3
Illinois Steel Co., 208 S. LaSalle St.	G-E-Baldwin	1.75	1.5
International Pavers, 100 N. LaSalle St.	York-C.E.	0.75	0.75
Johnson, John E., 112 S. Michigan Ave.	Pleasant Air-C.E.	0.25	0.25
Johnson, M., 25 E. Washington St.	Pleasantaire	0.25	0.25
Kelly, John J., 135 S. LaSalle St.	General Electric	2	2
Kelly, John J., 135 S. LaSalle St.	Carrier-C.E.	0.75	0.75
Kolb, H., 2711 N. Kedzie Ave.	Carrier-C.E.	0.75	0.75
Krim-Ko Co., 4830 S. Turner Ave.	York-C.E.	0.75	0.75
Kroger Stores, 8259 S. Vincennes Ave.	Frigidaire	0.75	0.75
Kuppenheimer, B., 415 S. Franklin St.	Carrier-Air Comfort	0.75	0.75
Langer, Chas., 332 S. Michigan Ave.	Frigidaire-Standard	1	1
Levinsons Loans, Inc., 739 N. Clark St.	Frigidaire-Kroeschell	0.75	0.75
Loeb, A., 400 W. Madison St.	York-C.E.	1	1
Lord & Thomas, 915 N. Michigan Ave.	Frigidaire	3	3
MacSim Bar Paper Co., 228 N. LaSalle St.	Carrier-C.E.	0.75	0.75
Madgan Bros., 4033 W. Madison St.	York-Harry Alter	0.75	0.75
Marsh & McLennan, 164 W. Jackson Blvd.	Carrier-Air Comfort	5	5
Masonite Corp., 111 W. Washington St.	Frigidaire	1.5	1.5
Mayer, Walter H., 325 W. Monroe St.	York-Harry Alter	0.75	0.75
McConkey & Booth, 210 S. Clark St.	Air Devices	1.25	1
McKinsey, Jas. O., 222 N. Bank Dr.	Carrier-Air Comfort	0.75	0.75
McNaught Metal Products Co., 3982 W. Barry St.	Norge-Sampson	1	1
McNeil & Co., Geo., 640 N. Wells St.	Frigidaire-Kohlman	1.5	1.5
Meinrath Brokerage, 1 N. LaSalle St.	Deissler-Baldwin	3	3
Morris, Edw., First National Bank	Carrier-Air Comfort	0.75	0.75
Nat. R.R. Adj. Board, 220 S. State St.	General Electric	9	9
National Safety Council, 20 Wacker Dr.	York-Harry Alter	0.75	0.75
Nationwide News Service, 9557 S. Longwood	General Electric	0.5	0.5
North-Amusement Co., T. T., 175 W. Jackson Blvd.	Deissler-Airgard	0.75	0.75
Novak, Barney, 17 N. State St.	York-Harry Alter	0.75	0.75
Nugent, C. Mgr., 910 S. Michigan Ave.	Kelvinator	1	1
Oberfelder, H. M., 110 S. Dearborn St.	York-Harry Alter	0.75	0.75
Pabst Blue Ribbon, 221 N. LaSalle St.	Air Devices	1.25	1
Pereira, Harold, 221 N. LaSalle St.	Frigidaire-Kroeschell	0.75	0.75
Pollack, M., 325 W. Adams St.	Carrier-C.E.	0.75	0.75
Progressive Tool Co., 1303 W. Jackson	Pamco	0.5	0.5
Public Service Co., 69 W. Monroe St.	Frigidaire	0.75	0.75
Randall Graphite Co., 609 W. Lake St.	York-Harry Alter	1	1
Rosin Starr, Inc., 15 E. Washington St.	York-Harry Alter	1	1
Schrager, Charles L., 110 S. Dearborn St.	York-Harry Alter	0.75	0.75
Scoble, D., 208 S. LaSalle St.	Carrier-C.E.	0.75	0.75
Shambough, G. E., 122 S. Michigan Ave.	General Electric	1	1
Siedlinsky, V. E., 4143 Archer Ave.	York-Harry Alter	0.75	0.75
Standard Process Corp., 734 Lexington St.	Frigidaire-C.E.	0.75	0.75
Stein, Lawrence, 815 W. Van Buren St.	West-Kroeschell	1	1
Stensgaard & Assoc., W., 346 N. Justine St.	Carrier-C.E.	0.75	0.75
Sterling Hosiery, 314 W. Adams St.	Frigidaire-C.E.	1.25	1.5
Strauss Security, 135 S. LaSalle St.	Pleasantaire-Harry Alter	0.25	0.25
Stone, Judson F., 30 N. LaSalle St.	Carrier-Air Comfort	2.25	2
Summer, Fred J., 2145 E. 83rd St.	Carrier-Air Comfort	2	2
Thermal Air Cond. Inst., 125 W. Hubbard	General Electric	0.5	0.5
Twentieth Century Press, 40 S. Clinton St.	Frigidaire-C.E.	0.75	0.75
Underwood, Morgan P., 231 S. LaSalle St.	Pamco	1.5	1.5
Union Pacific R.R., 58 E. Washington St.	Carrier-Air Comfort	0.75	0.75
Union Tank Car Co., 228 N. LaSalle St.	York-Harry Alter	0.75	0.75
U. S. Cold Storage, 1526 First National Bank	Kelvinator	0.75	0.75
U. S. Color Card Co., 144 W. Jackson Blvd.	York-Harry Alter	0.75	0.75
Utilities Eng. Inst., 404 N. Wells St.	General Electric	0.5	0.5
Wanzer & Son, Sidney, 130 W. Garfield	York-Harry Alter	0.75	0.75
Western Equip. Co., 111 W. Washington St.	Pamco	0.75	0.75
Whitlock & Co., 333 N. Michigan Ave.	Air Devices	0.5	0.5
Whiteman & Barnes, 100 S. Jefferson St.	Kelvinator-M. & M.	0.5	0.5
Wilkinson, F. R., 209 S. LaSalle St.	York-C.E.	0.75	0.75
Zeigler Coal & Coke Co., 21 E. Van Buren	York-West. & Camp.	1.5	1.25

(Editor's Note: Tabulation of Chicago 1937 installations will be concluded in next week's issue.)

## Key Executives Are Named For Frigidaire's New District Sales Office At Nashville, Tenn.

NASHVILLE, Tenn.—With arrival in Nashville of key members of its executive staff, the newly established Nashville district headquarters of Frigidaire division, General Motors Sales Corp., has started functioning in quarters at No. 4, Cummins station, according to Fred M. Davison, district manager.

Frigidaire has taken two floors of this brick building with general offices located on the second floor front and the remainder of the building devoted to warehousing of products and service parts.

In addition to Mr. Davison, who was transferred to Nashville from Cincinnati sales headquarters, the executive staff is made up of:

Virgil Wingate, comptroller, formerly credit manager in Detroit.

John Hopkins, service and installation manager, formerly air-conditioning supervisor in Chicago.

I. R. Ogglesvy and S. M. Marvick, district sales supervisors, formerly sales representatives at Dayton.

Carl Hoebner, district sales supervisor, formerly in a similar capacity in the Atlanta district.

## FOGEL PROUDLY PRESENTS

### 1938 LINE OF COMPLETE FOOD MARKET EQUIPMENT:

Display Cases, Walk-in Coolers, Vegetable Display Cases, Reach-In Boxes for Restaurants, Hotels, and Bakers.

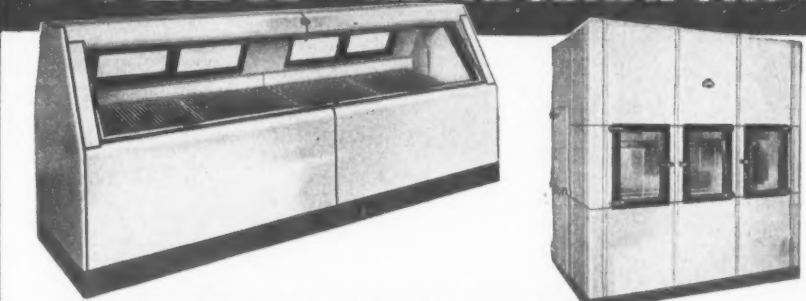
- Streamlined Beauty
- World's Highest Quality
- Genuine Porcelain Interior and Exterior—(No Imitation Finishes Used)
- Assured Lifetime Vision
- Competitively Priced
- Liberal Dealer's Discount
- Financing Plan for Dealers
- Over 40 Years of Experience

WRITE IMMEDIATELY FOR FULL DETAILS

FOGEL REFRIGERATOR CO.

16th & Vine Sts., Philadelphia, Pa.

## TYLER WELDED STEEL REFRIGERATORS



### A COMPLETE NEW LINE FOR 1938

Fastest selling line ever offered to the trade. Completely covers the field. Pace-setting values in Top Display and Double Duty Cases—6, 8, 10 and 12 foot lengths... Two shelf cases... Delicatessen cases... Reach-In Boxes... Walk-In Coolers. All streamlined with striking modern beauty and engineered with latest improvements.

With this new Tyler line of commercial refrigerators you can step out ahead of all competition. Write today for free literature and attractive dealer proposition.

TYLER FIXTURE CORP. Dept. R, NILES, MICH. NEW YORK OFFICE, 801 W. 20th St. CHICAGO OFFICE, 1803 W. Ogden Ave.

## Sherer REACH-IN BOXES and COOLERS

Increase your compressor volume by selling SHERER Reach-in Boxes, Coolers and Cases. Your customers prefer to depend on one source for equipment and service.



### The Sherer Franchise Offers

- ★ COMPLETE LINE of CASES, COOLERS & BOXES.
- ★ NEW EQUIPMENT constantly under development, opening new fields for compressor sales.
- ★ LAYOUT DEPARTMENT—layouts for food store modernization program without obligation.
- ★ ADVERTISING—Sherer Equipment advertising by mail and in leading trade publications.

Write for catalog and franchise details, mentioning territory desired.

SHERER-GILLET CO.

MARSHALL, MICHIGAN

Manufacturers of Refrigerated Display and Storage Equipment

## More Than Two Hundred of America's Livest Jobbers Sell

# Ranco

Ranco INC., Columbus, Ohio, USA

### Household Refrigerator and COMMERCIAL CONTROLS

Write for Names of Jobbers Nearest Your City

"The result is that although the light itself has a bluish-white cast, materials of certain colors such as the reds are not recognized, while yellows and greens are emphasized. However, in the work spaces where whites, grays and other neutral tones predominate, Type 'H' mercury lamps are satisfactory.

"The operating characteristics of mercury lamps are such that each lamp requires a special transformer or regulating device for starting and operating. Also these lamps require several minutes to attain full brilliance after being turned on.

"Another type of lamp now under development which promises to find application in auditoriums, theaters, restaurants, etc., where luminescent incandescent lamps are now being used, is the fluorescent lamp, which is in effect a mercury lamp similar to the Cooper-Hewitt but smaller."

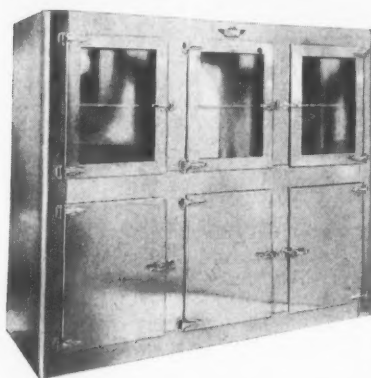


## NEW IDEAS FOR REFRIGERATOR DOORS

1. Locked-in, lift-out doors
2. Tightly closed overlap
3. Reduced air leakage
4. Roller bearings
5. Quiet closure
6. Lighter weight
7. Greater strength
8. Shock absorbing jambs

## ACE "LOXIT" (Pat'd) DOORS

At no extra cost—all the engineering features for display cabinet doors listed at right—with the new Ace "Loxit" hard rubber assembly units—doors, rails, jambs. Complete range of sizes—American Hard Rubber Co., 11 Mercer St., New York . . . 111 West Washington St., Chicago, Ill. . . Akron, Ohio.



## New As Tomorrow

and just what the live distributor has been waiting for.

A Reach-In of lifetime 18-8 Enduro Stainless Steel.

A variety of models and sizes.

Style—Quality—Beauty—Endurance.

An article in demand by the quality buyer.

An Amazingly low price.

A worth-while direct factory discount.

Write

**BROMANN BROS., Inc.**  
Fulton & Peoria Sts. Chicago, Illinois



## DISTRIBUTORS WANTED!

Write for details of Profit-making franchise. Complete PERCIVAL line meets every requirement of the modern food store.

Modern styling . . . Beautiful design . . . Outstanding construction . . . Economical operation! TOMORROW'S case, presented TODAY! Get the jump on other distributors by selling this modern marvel of electrical refrigeration. Its NEW style and NEW features give you exclusive selling advantages! NEW PERCIVAL FINANCE PLAN HELPS YOU SELL.

**C. L. PERCIVAL COMPANY**  
DES MOINES . . . IOWA  
51 YEARS OF SERVICE 1886-1937

**A BOMB SHELL**  
*THE Sensational*  
**NEW ECON-O-CASE**

**KOCH REFRIGERATORS**  
NORTH WARRICK CITY, MISSOURI

In design, in construction, in performance, this new display case is a sensation. Yet it is low in price and economical to operate. The Koch line is complete. There is a counter, a cooler, or a refrigerator that will meet every requirement. **WRITE KOCH TODAY** There is big money in the Koch line for qualified distributors.

## Selling Electric Ranges

## Survey of Appliance Field Indicates The Electric Range Is Rapidly Approaching a 'Profit Period'

NEW YORK CITY—The electric range is pointed to as the next great profit opportunity in the household appliance industry, in a study recently completed by the research department of McCall's magazine under the supervision of Arthur Hirose, McCall's director of research.

Excerpts from the study, which was made with the cooperation of electrical appliance trade organizations, business newspapers and magazines, household appliance manufacturers, and individual members of the industry, are presented here with the permission of McCall's.

Brief sales histories of various appliances are presented in the first part of the study, as possible clues to the qualities women expect in products of this kind. Considered here are:

## LOOKING AT THE FIELD

1. The electric iron. Introduced at the time of the Chicago world's fair of 1893, this appliance attained public acceptance about the turn of the century.

Today, more irons are in use than any household appliance; 93.2% of wired homes have one. Sales are still large, 3,765,000 being sold in 1936, but are primarily replacements. Retail price is now considerably lower than it was even a few years ago (it was \$4.43 in 1936), despite the efforts of manufacturers to introduce new features which would permit of higher prices.

2. Vacuum cleaners. This appliance attained public acceptance in 1914. Today 48.9% of wired homes have such an appliance. Sales in 1936 were 1,146,000 units, but the average retail price was only \$54.

3. Washing machines. Public acceptance for this appliance was attained about 1917, due partially to the dearth of household servants when the United States entered the World War. Today 52.5% of wired homes have electric washers; sales in 1936 were 1,528,585 units, at an average retail price of \$66.

4. Electric refrigerators. Today this is the fastest selling major home appliance. Introduced prior to 1915, it attained public acceptance in 1926, when public utilities became aware of its load-building possibilities. Statistics for 1936 showed a market saturation of 41.1%, with sales that year of more than 2,000,000 units. Average retail price was \$164.

## REFRIGERATOR PROGRESS

With the exception of the year 1932, number of household electric refrigerators sold has increased each year, it is pointed out.

Of the 31,800,000 homes in America, one third are not prospects for electric refrigerators, because they have no electricity. With more than a third of the remaining homes already equipped with refrigeration, the study points out that it will not take many more 2,000,000-unit years to attain almost complete saturation of the market, unless replacement business (estimated at 10% in 1936) picks up greatly.

Sales increases, once as high as

173% over those of the previous year, also have become pretty well stabilized at about 26 to 27%, it is said; and while an estimated 225 billion dollars has been spent by the public for electric refrigeration, prices have dropped from an average of \$550 in 1921 to \$164 in 1936.

Because replacement business is still a relatively small percentage of total yearly sales, most leading refrigerator manufacturers have turned to the production of other home appliances, the study declares.

## OTHERS THROWN OUT

The survey considers and discards several other major home appliances before settling upon the range as the next product likely to be sold in large volume at a profit by manufacturers, distributors, and dealers.

Ironers, although in use in but 5.5% of wired homes, with sales of 178,000 units in 1936, are discarded because, while the ironer is "a useful appliance with good sales possibilities, its low price (average in 1936: \$58) presents smaller profit possibilities than other appliances."

Electric water heaters, the study notes, are in use in 2% of wired homes, with sales of 104,000 units in 1936 at an average retail price of \$73.

This appliance has "good market possibilities, but less dramatic sales appeal today than appliances which women consciously use," the survey comments. "The range must bring the water heater along with it."

Air-conditioning plants also are considered, but it is noted that "probably a boom year in home building will be needed to put air conditioning in the volume class," since less than 1% of wired homes have such plants.

## SOME NOT READY

Oil burners are potentially splendid appliances from a volume standpoint, but are handicapped at present by market areas where coal and gas fuels are extremely cheap, it is pointed out. Sales in 1936 were 218,000 units, and market saturation at the end of that period was 5.4%.

The dishwasher, the survey infers, is in the "not ready" class. But 0.4% of wired homes use such an appliance at present, and 1936 sales were less than 10,000 units, average price being \$250. This is an appliance, says the survey, "about which the consumer and the appliance trade are still luke-warm, if not downright apathetic."

Discarding these appliances from current consideration, there is left only the electric range. At the end

of 1936, the survey points out, only 7.9% of wired homes had ranges; sales during the year totaled 318,000 units at an average price of \$130. The electric range showed the largest increase in sales (1936 over 1935) of any major home appliance.

## RANGE PROSPECTS

What facts are there on range sales prospects?

1. The electric range in recent years has made large sales gains on its competitors. In 1933 only one electric range was sold to each 15 gas ranges. In 1936, however, one electric range was sold to each five gas ranges.

2. New-home building is focusing attention on the kitchen. A few years ago, the bath room was the magnet that attracted attention. In the next phase, it was the recreation or "rumpus room." Now it is the kitchen, home-builders agree. From the housewife's viewpoint, the range is exceeded only by the refrigerator as an attention-getter in the kitchen.

3. Kitchen modernization focuses attention on the electric range.

4. The electric range doubles sales opportunities for the manufacturer of appliances—and more. It offers the retail salesman a chance to make another sale to each owner of a refrigerator. Quoting the survey:

"The refrigerator has opened up the kitchen as a market for many household appliances. It is possible, therefore, to sell additional kitchen appliances in all of the nine to ten million homes that have automatic refrigerators."

"The great problem in the automatic refrigerator field will naturally be replacements, as more and more existing homes buy their first refrigerator."

"With declining refrigerator prices, it will not be possible for the refrigeration industry to spend the same number of dollars on house-to-house calls. Yet, somehow it will be necessary to go into the kitchen, determine the age and condition of the refrigerator, and sell into the home a replacement refrigerator. How can this be done at the cheapest possible cost?"

## CANVASSING TIE-IN

"Obviously, the house-to-house salesman going into the average home of the refrigerator owner to sell a new electric range stands a better chance of making a replacement sale on the refrigerator than does the house-to-house salesman going into the home's basement, for example, to sell an oil burner."

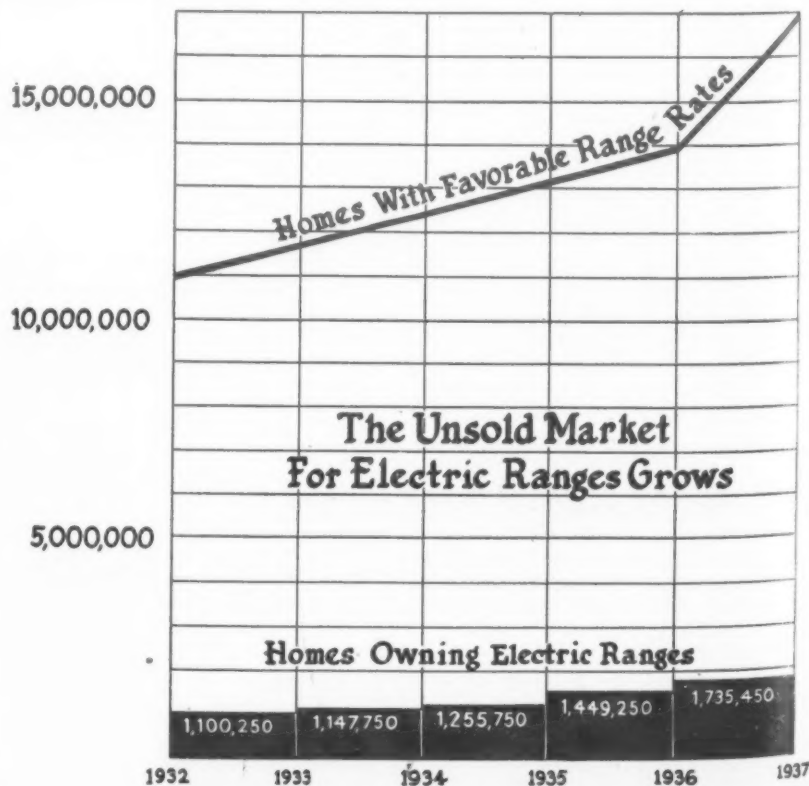
5. The electric range, properly manufactured and sold, will do much to iron out the peaks and valleys in the refrigerator business.

6. The electrical appliance industry has changed radically from 10 years ago, so that today manufacturers, distributors, and dealers need new appliances with the same lure as the refrigerator.

Ten years ago, the survey points out, the appliance manufacturer was producing washers to retail for \$143, refrigerators to retail for \$350, and other high-priced appliances. The electrical supply jobber handled hundreds of items, was not dependent

(Concluded on Page 23, Column 1)

Table 1—Number Of Homes With Favorable Rates



## The Unsold Market For Electric Ranges Grows

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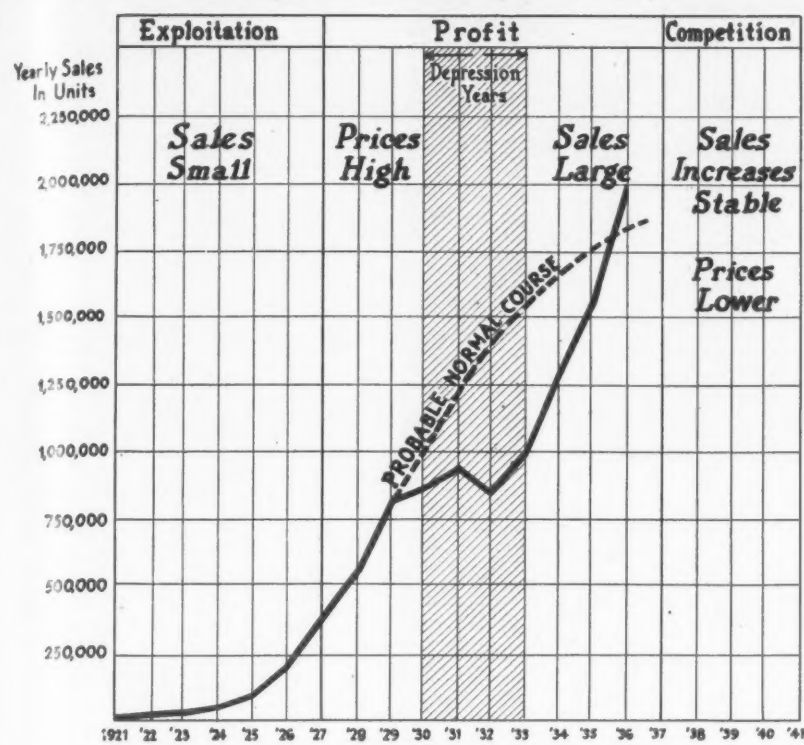
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Table 2—Three Stages Of Refrigerator Sales History



Figures from "Air Conditioning &amp; Refrigeration News"

## Kitchen's Growing Importance In Home Life Puts Spotlight On Electric Ranges

(Concluded from Page 22, Column 5) on any one appliance's sales for survival in business.

The electrical dealer was not a specialist. He sold many appliances, and new appliances enlarged his market periodically. The consumer owned few appliances, and could still be sold a washer, vacuum cleaner, refrigerator, and other high-profit items.

Today, however, the distributor is dependent for existence upon a few major items, instead of hundreds, as formerly.

Appliance retailers today are inclined to specialize on the larger appliances, and face a waning market for easily accomplished sales. The consumer, owning many appliances, resists replacement sales, but can be sold new appliances with the lure of the refrigerator.

Are there enough good range retailers to go around?

Out of an estimated 19,000 recognized appliance dealers, only 13,000 now handle electric ranges, leaving 6,000 good retailers still open as range outlets.

Will dealers and central station companies push electric range sales?

Central station companies have been largely responsible for past sales of electric ranges. They are interested in seeing more ranges sold quickly and in larger volume—but they need encouragement.

In less than 20 years, the study states, electric light and power companies, aided by appliance manufacturers, have more than doubled the consumption of electricity in the average home. But at the same time, the revenue received by utilities for electricity sold to the home has been radically reduced.

When utilities look around for those appliances which build the load most, they find that the electric range, with the single exception of the electric water heater, consumes more electricity than any other household appliance.

Although all wired homes do not yet have favorable range rates, there are some 17 million homes on the lines of utilities which offer favorable electric cooking rates, the survey points out. Only 10% of these homes have sold electric ranges, leaving 90% still to be sold. As more and more wired homes obtain rate reductions, the potential electric range market will still further expand. (Table 1).

Theoretically, there are three stages of appliance sales:

1. The period of exploitation, occupying between 18 and 22 years, during which about 1,000,000 homes are equipped. Sales increases during this period are small, manufacturers spending the majority of their money for invention, development, and exploitation.

2. The profit period, usually lasting from one to eight years, in which six to eight million homes are equipped. Sales increases during this period are rapid. Manufacturers make a profit on their investment. This also is the era of intensive promotion.

3. The period of competition, lasting the rest of the industry's life. Sales increases decline during this period, price declines, profits are smaller, and there is a smaller gain in new customers. This is the replacement era.

### INDUSTRIAL PERIODS

Viewing various major appliances

in the light of this theory, the survey concludes that:

The vacuum cleaner is definitely in the third, or final stage of its sales history. Gains in recent years, it is pointed out, are an attempt to catch up to probable normal sales, had there been no depression.

The washing machine also is in the third, or competitive, stage of sales development. Prices are low, and recent sales gains are an attempt to make up for sales losses during depression years.

The radio industry today also is in the third stage of its sales development. Prices are low, and manufacturers are searching for new features with which to boost retail prices, and hasten obsolescence and replacements. Since the exploitation period on radios was telescoped into four short years, the profit period was also greatly curtailed.

The electric refrigerator is still in the second, or profit, stage of its sales development. But there are signs that the refrigerator is about to go out of the profit stage into the competitive stage, the survey declares. Sales are still large, yet increases are inclined to stabilize, and prices are going considerably lower. (Table 2).

### READY FOR PROFIT

The electric range is the one major home appliance about to enter its second, or profit, period, the survey points out. More than a million homes are equipped with ranges. Prices are still high, and it is possible for the range to enter now the second period of its development. (Table 3).

The electric range has many appeals to the housewife. While only 50% of American families used any sort of refrigeration when the electric refrigerator first was promoted, more than 97% of American families cook today. There are fewer barriers to range sales than those that faced the refrigerator 10 years ago.

Also, the survey goes on, the electric range matches each of the six appeals that have sold more than 9,000,000 refrigerators, and adds three appeals of its own. These are:

### THE NINE APPEALS

1. Cleanliness. No smoke, no soot. True kitchen cleanliness.
2. Pride of ownership. The newest form of cookery.
3. Creative urge. Better, surer cooking results. Pride in cookery.
4. Health. The cure for kitchen headache.
5. Economy. Factory efficiency in home food production. Less food spoilage.
6. Convenience. No pot watching; time and temperature controlled.
7. Coolness. No flame, no heat to be dissipated into the kitchen, no obstacle to proper air conditioning.
8. Safety. No danger of asphyxiation.
9. Release of time and sociological factors. More time saved for other tasks and leisure. The young wife in business vs. the young wife as an earner in the home.

### PRICE DIFFERENTIAL LOW

From a dollars-and-cents standpoint, a more favorable market is indicated for the electric range than for even the electric refrigerator, the survey states, in pointing to the following statistics as evidence:

Price of a large electric refrigerator may be \$250, compared with \$25 for an ice box, a price differential of 10 to 1; whereas an electric range, installed, costs \$160, compared to \$50 for a gas range, a price differential of but 3.2 to 1.

The electric refrigerator has six principal sales appeals; the electric

range duplicates these, and adds three (the last three named in the list above) of its own.

But, where refrigerator manufacturers spent millions of dollars in promotion in 1936, range manufacturers were spending only thousands for the same purpose. Result was \$328,000,000 in 1936 sales for refrigerators, against \$41,413,000 for electric ranges.

### PROMOTION NEEDED

Why must the electric range be advertised and promoted now, and not next year or two or three years from now?

Because, the survey tells range manufacturers:

1. Now you can finance promotion.
2. If you let things drag, competition will inevitably force range prices down.
3. This will leave no margin for the promotion needed to build volume sales.

"Electric range prices are now relatively high—that is high compared to what they will inevitably become," the survey finds. "If the experience of other household appli-

ances is any criterion, the electric range will inevitably have lower and lower retail price.

"The low retail price is made up of much the same elements as are contained in a high retail price. Even percentage-wise, these various elements may remain the same after a price has been hammered down from a high price to a low price.

"However, from a dollars-and-cents viewpoint, the low retail price does not contain sufficient manufacturers' margin, retailers' margin, or distributors' margin to allow for an adequate promotion job.

"The electric refrigerator people wisely did their promotion and advertising on a large scale in those years when average retail prices were still high."

### Passano Opens Own Store In Miami, Fla.

MIAMI, Fla.—Leonard W. Passano, former salesman with the Baltimore branch of Westinghouse Electric Supply Co., has opened a Westinghouse refrigerator and appliance dealership here.

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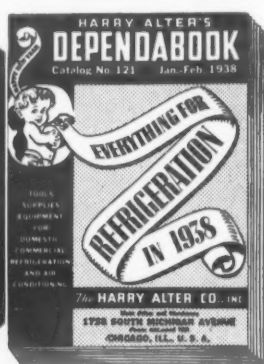
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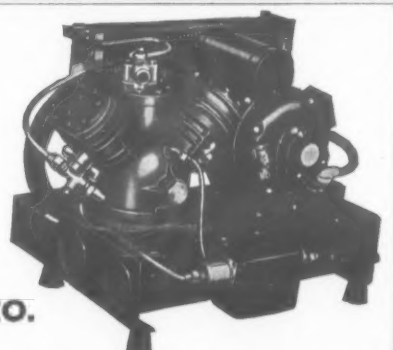
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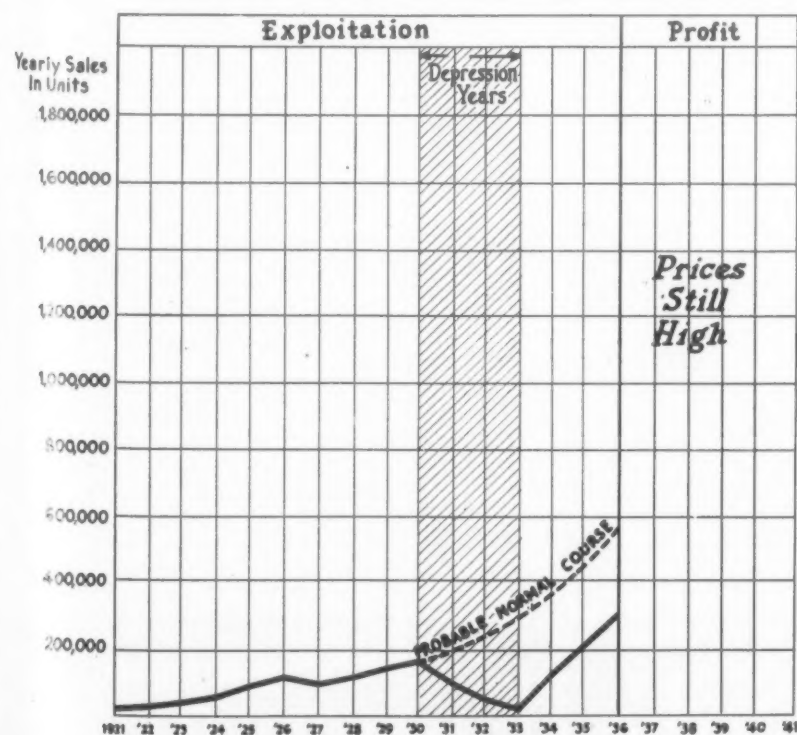
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Table 3—Electric Range Enters the Profit Period



Figures from National Electrical Manufacturers Association